TASMANIAN OFFICIAL RECORD.

1891.

JOHNSTON.

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TASMANIAN OFFICIAL RECORD.

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TASMANIA

Scale 15 miles to an inch

B A S S S T R A I T

BANK'S STRAIT

REFERENCE

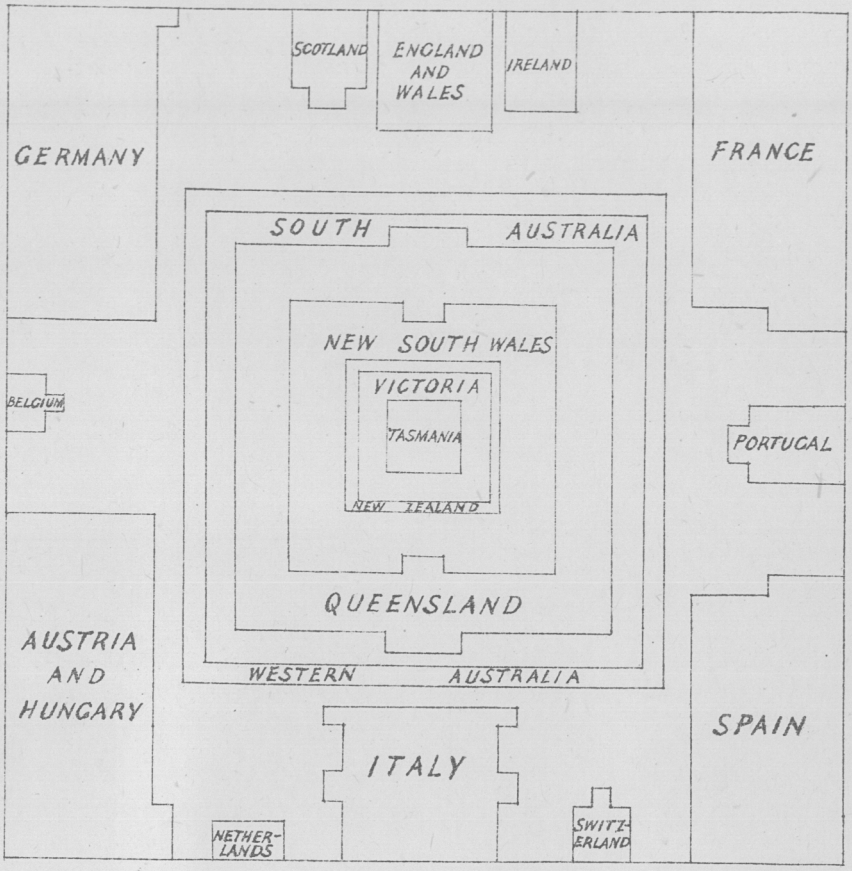
- Towns settled and partially so — DELORAINE
- Town Reserves — EBRINGTON
- Railways constracted and being constructed
- Railways proposed
- Roads
- County boundaries
- Alienated Lands — Colored
- Mineral Lands — Gold
- " " — Silver
- " " — Tin "
- " " — Coal "

R. Bennett Lithographer, Lands Department, Hobart Tasmania. January 1891

Compiled and drawn by Leventhorpe Hall

I

AREA OF AUSTRALASIA AND PRINCIPAL EUROPEAN COUNTRIES COMPARED



	AREA IN SQUARE MILES
Australasia	3 161018
Western Australia	1060000
South Australia	903690
Queensland	668497
New South Wales	310700
Austria & Hungary	240942
Germany	212028
France	204092
Spain	191100
Italy	114926
New Zealand	104032
Victoria	87884
England & Wales	58186
Portugal	36510
Ireland	32531
Scotland	29820
Tasmania	26215
Switzerland	15992
Netherlands	12648
Belgium	11373

	AREA IN SQUARE MILES
Canada	3448542
United States Am	3557000
Russian Empire	8469704
British Empire	8202749
Europe	3756002
Asia	17·208208
Africa	11·511776
America	14·850631
Australasia & Polynesia	3 455802
Polarland	1·728585
Worlds area	52511004

R.M. Johnston

TASMANIAN OFFICIAL RECORD.

1891.

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BY

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By Authority.

SECOND YEAR OF ISSUE.

Tasmania:
WILLIAM THOMAS STRUTT, GOVERNMENT PRINTER, HOBART.

1891.

PREFACE TO SECOND ANNUAL PUBLICATION.

ALTHOUGH some portions of the historical and descriptive matter of the previous issue of the Official Record are of a permanent character, and are scarcely affected by current events, yet the greater part is so intimately intertwined with the ever-altering present by tabular contrasts and comparisons that it was found to be impossible to confine succeeding issues to the more purely statistical sections—as suggested by some friendly critics—without impairing its usefulness as a source of reference with respect to the more important matters relating to the Colony. It is hoped, however, that the attention bestowed upon classification will obviate any difficulties that might arise from the necessity of bringing together in one volume such a variety of subjects.

In statistical matters relating to a particular colony there are two dangers to be avoided. Bare statistics of any one place or year, however correctly or elaborately given, lack colour or fail to impress the mind with their local significance or relative importance; that is, by themselves, they are devoid of "perspective," so to speak. On the other hand, an accumulation of unimportant local statistical details, or the introduction of an undue proportion of the details of matters pertaining to foreign countries, however valuable in themselves, may have the effect of destroying to some extent the local colour and usefulness of the work, and thus the important local matters may be buried or obscured by the crowding of matters which are unimportant or have little local significance. It is scarcely possible to avoid altogether either of these dangers successfully; but the arrangement and classification of the present work is designed to throw the fullest light upon local subjects of greatest importance from the present standpoint of a Tasmanian observer. Thus, as in the perspective of a landscape, it has been attempted to form the necessary boundaries corresponding in definition to the distance, middle, and foreground of a picture. Accordingly the statistical details of foreign countries are properly restricted to the grand contour lines; Australasian matters coming nearer to the standpoint of the local observer, and often touching its most important local details, have their outlines brought more prominently into view, as in the middle-ground of a picture; while, to heighten the effect, the

local general features of the present are depicted with all the necessary fulness of detail, as in the foreground of our imaginary landscape.

In this issue important additions have been made in connection with the development and working our Railway Systems, Revision of Land Laws, Finance, Public and Private Wealth, and National Income.

Two interesting reports relating to our more important minerals have been specially prepared for this work—(*See* Appendix.) The first, by Mr. T. C. Just, gives the history of the first attempt to utilise the important Iron Deposits in the neighbourhood of York Town and the Tamar. The second, by Mr. A. Montgomery, M.A., Government Geologist, gives a valuable account of the mining industries of the Island, more particularly as regards the now promising Silver Fields of the West Coast of Tasmania.

Statistical Department,
Hobart, 1st January, 1891.

PREFACE TO FIRST ANNUAL PUBLICATION.

For some time past the want of a handy official book, specially relating to Tasmania and its affairs, has been greatly felt. Hitherto the only authoritative information furnished by the Statistical Office was contained in the Report prefixed to the bulky volume of yearly statistics, and was solely restricted to the analyses of tables relating to departmental, economic, and social matters. That work is still most necessary as a source of reference, but it is too costly and somewhat cumbersome; and it lacks information much sought after bearing upon Early History, Physical Description, Natural Resources—Mineral, Animal, and Vegetable—Constitution and Government, Crown Lands available for selection, and other interesting subjects.

By the desire and encouragement of the Honourable P. O. Fysh, Premier and Chief Secretary, the Author has endeavoured to meet all these wants in the present volume; and whatever defects may be apparent in this initial effort, he hopes that its purpose will, in a great measure, be fulfilled, and that it will be the means of diffusing useful information about the Colony and its rich natural resources.

The Author is indebted to the Statisticians of the various Colonies of Australasia and Canada for much valuable matter relating to their respective countries. He is under special obligation for material assistance to the following eminent authorities; viz.—Dr. Giffen, Board of Trade Department, Whitehall; Messrs. Henry Heylyn Hayter, C.M.G., Victoria; T. A. Coghlan, A.M.I.C.E., New South Wales; F. de Stein (Almanack de Gotha); J. Scott Keltie (Statesman's Year Book); S. C. D. Roper, Agricultural Department, Canada (Statistical Abstract and Record).

For local information on special subjects the Author's thanks are due to the following gentlemen; viz.—Colonel Legge, R.A., Commandant of Local Forces; Messrs. W. F. Ward, A.R.S.M., Government Analyst; E. A. Counsel, Deputy Surveyor-General; F. Belstead, Secretary of Mines; W. T. Strutt, Government Printer; and to many other persons not here specially mentioned.

Statistical Department,
Hobart, 30th December, 1889.

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CORRIGENDA.

P. 130, lines 25–26, after depth ? omit the phrase *multiplied by itself.*

P. 303, lines 5. 7. 10, *for* rates, *read* ratio.

P. 303, line 6, *after* colonies, *insert* bears to Total Private Wealth.

P. 305, line 23, *for* is apt, *read* are apt.

P. 393, line 18, *for* fully, *read* nearly.

ADDENDA.

P. 385. In the Year Book of Western Australia (foot-note) for 1889, Mr. Gale shows, p. 56, that the Cases of Drunkenness for that Colony for the year 1889 numbered 749, or about 17·39 per 1000 persons.

P. 302. Wealth of Population for Victoria is stated by Mr. Hayter to be £482,000,000, or £454 *per head*, for the year 1889.

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CHAPTER I.

General Physical Outline.

The Island of Tasmania is situated in the Southern Hemisphere, between the parallels of 40° 33′ and 43° 39′ South latitude, and between 144° 39′ and 148° 23′ meridian of East longitude, and corresponds nearly with Southern France and Northern Italy in Northern latitude. It is irregularly heart-shaped, and occupies an area of 26,215 square miles, *i.e.*, nearly the area of Scotland, or about equal to Belgium and Switzerland taken together. It is bounded on the north by the shallow and narrow Bass Strait, which separates it from the south-eastern extremity of the Continent of Australia; while on its western, southern, and eastern sides its shores are exposed to the roll of the great Southern Ocean.

Nearly forty years ago its general physical features were most graphically described by Count Paul de Strzelecki, ("Physical Description of New South Wales and Tasmania," pp. 462, 8vo.—London, 1845); and, soon after, many of its geological features were again briefly sketched by the late J. Beete Jukes, ("A Sketch of the Physical Structure of Australia," pp. 95, 8vo.—London). Although the extended researches of many local observers since that time have added very considerably to our knowledge of the physical details of Australia and Tasmania, the descriptions of the main features as recorded by the two accomplished observers already referred to are wonderfully accurate, and even as regards local details are still, so far as they extend, most valuable sources of reference.

The main axis of the Great Cordillera[a] bordering the eastern coast line of Australia may be traced across Bass Strait in the chain of Island forming the Furneaux and Kent's Group, which almost continuously link Tasmania with Wilson's Promontory, the nearest and most southerly part of the Australian mainland.

From Wilson's Promontory its course may be traced in a similar manner along the whole eastern border of Australia, and even across the Torres Straits to New Guinea, not by an uninterrupted elevated mountain chain, but, as described by Mr. Jukes, it is made up of many masses of various characters: sometimes peaked and serrated ridges; sometimes detached hills rising from slightly elevated ground; sometimes great table-lands, which, when composed of the prevailing diabasic greenstone, often end towards the sea in nearly perpendicular escarpments; and sometimes gently sloping plains, furrowed by innu-

[a] So termed originally by Sir Roderick Murchison.

merable precipitous gullies and ravines. Large lateral spurs often diverge on either hand from the central portion of the chain, and especially on its seaward side, appear like separate and independent mountain masses.

Tasmania is wholly occupied by the ramifications of this chain, and, in itself, it may be said to embrace one and all of its characteristic features.

If we take our stand near Lake Fergus, to the east of Lake St. Clair, we find that we are situated nearly in the centre of an extensive plateau—a smaller Tasmania—with an elevation, especially on the northern side, of between three and five thousand feet above sea level.

This elevated plateau extends from Dry's Bluff in the north-west to the Denison Range in the south-west, and although often receding at points adjacent to the sources of the principal rivers, invariably presents a bold crested front to the north, west, and east. At its greatest elevation it is comparatively level, and contains many extensive fresh-water basins, such as Lake Augusta, Lake St. Clair, Lake Sorell, Lake Echo, Arthur's Lake, Lake Crescent, and the Great Lake: the latter is estimated to be above 90 miles in circumference. The marginal crests of this mountain table-land, which are composed principally of diabase, and are known locally as "Tiers," have a very commanding aspect in the neighbourhood of Longford, Westbury, Deloraine, and Chudleigh.

The extent of the principal elevated plateau, which determines the northern, western, and southern drainage slopes of the Island, is best appreciated when we consider that it maintains its general altitude in a westerly direction from Dry's Bluff (4257 feet) on the north to Cradle Mountain (5069 feet) in the north-west, a distance of nearly 50 miles; from Dry's Bluff in a south-westerly direction to Denison Range, a distance of over 60 miles; and from Dry's Bluff to Table Mountain (3596 feet) in a southerly direction, a distance of above 43 miles.

This plateau itself again rests upon a more extended table-land, composed mainly of metamorphic schists or slates. The level of this table-land stretches westward—including the Middlesex Plains, the Hampshire Hills, and the Emu Plains—and maintains an altitude of 1200 to 2000 feet. Its limits follow the coast-line more or less closely, the space between it and the sea often broadening out into low-lying tracts, not much raised above the sea level. Here and there, rising abruptly from its surface, are to be seen isolated peaks chiefly of schistose formation, the most characteristic examples of which are Mount Bischoff (2598 feet), Valentine's Peak (3637 feet), Mount Tor, and Mount Pearse.

Ridges and plateaus of a similar character, more or less isolated, such as Ben Lomond (5010 feet) and Mount Wellington (4166 feet), are to be found in the north-east and south-west of the Island.

Towards the extreme west and south, granites, metamorphic mica and quartzose schists, with overlying slates, grits, and limestone, of Cambro-Silurian age, reappear again and again in anticlinal and synclinal ridges, which trend north and south, the most characteristic being the Huxley, Owen, Sedgwick, Franklin, and Arthur Ranges These rocks may also be seen following the south coast, and evidently

occupying nearly all that extensive mountain region to the south of the River Huon.

Settlement of population[a] has taken place principally among the plains and lower levels of the North-western, Midland, and South-eastern parts of the Island, following, in the main, the rocks of Tertiary and Mesozoic age. In the recent Tertiary period the soils of these plains and valleys have been greatly enriched by extensive outbursts of basalt, with accompanying tuffs. These comparatively level sheets of basalt are often of a great extent in the Midland, North-western, and North-eastern Districts, and there is ample evidence to show that, as in France and other parts of the world, they are invariably intimately associated with the ancient Tertiary lake systems. These basalts produce a very rich chocolate soil; and were it not for their influence the greater part of what is now the most fertile part of the Island would have been comparatively poor, or altogether sterile.

The climate, upon the whole, is exceptionally genial, and the appearance of the Island throughout is wonderfully beautiful, with its open plains, bordered by far-extending precipitous mountain tiers; its isolated shaggy peaks and wooded ranges: and its many noble rivers and lakes. Its coasts for the most part, especially towards the south, are bold, and frequently indented with splendid bays and harbours (such as the Derwent, where Hobart, the capital, is situated), affording ample shelter and safe anchorage for ships. On the western side one is reminded of scenes in the Highlands of Rosshire and Invernesshire in Scotland, from the picturesque character of the blue, white, and pinkish crystalline peaks and the fantastic outlines of the mountain ranges, which rise abruptly to a height of from 2000 to nearly 3000 feet above the Button Grass[b] Plains.

The vegetation which prevails among the older schistose rocks of the west and extreme south presents a totally different appearance to that which prevails in the more extensively settled districts of the East.

The western vegetation, as compared with that of the east, presents as marked a contrast as do the prevailing rocks upon which it flourishes. The characteristic trees and shrubs of the west include the following genera; viz.—*Fagus*, *Cenarrhenes*, *Anodopetalum*, *Eucryphia*, *Bauera*, *Boronia*, *Agastachys*, *Richea*, *Telopea*, *Grevillea*, *Orites*, *Athrotaxis*, *Dacrydium*, *Phyllocladus*.

On the eastern side the plains and rocky ridges, where not artificially cleared, are occupied by shaggy and often sombre forests, mainly composed of the following prevailing genera; viz.—*Eucalyptus* (Gum Tree), *Casuarina*, *Bursaria*, *Acacia*, *Leptospermum*, *Drimys*, *Melaleuca*, *Dodonea*, *Notolea*, *Exocarpus*, *Hakea*, *Epacris*, *Xanthorrhœa*, *Frenela*. The mountain slopes and ravines of the east have a vegetation well marked. In character it is more akin, and in many cases identical with that of the west. The Tree Fern (*Dicksonia Antarctica*) in the mountain ravines is especially remarkable. The following genera are also found in such position in great luxuriance; viz.—*Fagus*, *Anopterus*, *Phebalium*, *Eucalyptus*, *Richea*, *Cyathodes*, *Pomaderris*, *Prostanthera*, *Boronia*, *Gaultheria*, *Correa*, *Bedfordia*, *Aster*, *Archeria*, *Atherosperma*, *&c.*

[a] Population, 31st December, 1889, 151,450. [b] *Gymnoschœna spærocephalus.*

In the extreme west the trees and larger shrubs do not appear to ascend the schistose rocky mountain slopes to the same height as in the greenstone mountain slopes of the central and eastern parts.

The flora and fauna as a whole are almost identical with the flora and fauna of the Continent of Australia, and there is, even now, sufficient evidence to show that both have been derived immediately from ancestors which at least had established themselves in Australia and Tasmania during, and possibly even prior to the dawn of the Tertiary Period.

Meteorology.

There are as yet only eight stations established where a complete series of meteorological observations are systematically carried out; all of which, with the exception of one station (Oatlands, altitude 1337 feet), are situated along the seaboard at low levels, ranging from 15 feet to 67 feet altitude. Three of the latter—Launceston, Low Head, and Circular Head—are situated along the northern seaboard within the influence of the warm currents of Bass Straits; one, Falmouth, situated on the eastern seaboard; two—Hobart and Southport—situated towards the south, encircled by the projecting tongues of land which enclose Storm Bay and D'Entrecasteaux Channel; and one—Corinna—exposed to the colder western oceanic currents.

Besides these, however, the Government Meteorologist (Captain Shortt, R.N.) has recently largely increased the number of stations where observations are confined to rainfall. The number of these stations in the year 1889 was 43, including the more fully equipped stations. These are widely distributed throughout the Island at levels varying from 15 to 2000 feet altitude.

The results, as might be expected, vary greatly in mountainous plateaux and low-lying plains and valleys, accordingly as the stations are situated in the sub-alpine humid regions of the west, or along the milder and drier regions of the north, east, and south.

The following is a condensed tabulation of the results for the year 1889:—

	Height above sea level	Temperature in the Shade.		
		Max.	Min.	Mean.
Northern Seaboard—	Feet.	°	°	°
Launceston	67	91·0	28·0	57·1
Low Head	25	78·0	34·0	56·8
Circular Head	64	85·0	34·0	56·2
Inland—				
Oatlands	1337	89·0	20·0	51·5
Eastern Seaboard—				
Hobart	190	96·3	32·0	55·1
Southport	...	93·0	30·0	56·4
Falmouth	30	95·0	29·0	5·5
Western Seaboard—				
Corinna	15	93·0	32·0	54·3

	Mean Atmospheric Pressure.	Days on which Rain fell.	Amount of Rainfall.	Mean relative Humidity.	Clouds, Amount.
Northern Seaboard—	Inches.	No.	Inches.		
Launceston	29·956	126	32·98	0·77	4·4
Low Head	30·003	129	33·12	0·80	5·0
Circular Head	29·979	191	36·09	0·75	5·7
Inland—					
Oatlands	29·880	110	29·37	0·75	6·3
Eastern Seaboard—					
Hobart	29·891	180	30·80	0·76	7·6
Southport	29·970	187	50·36	0·77	5·8
Falmouth	29·964	99	38·98	0·74	5·3
Western Seaboard—					
Corinna	29·947	217	72·96	...	6·1

RAINFALL AT VARIOUS STATIONS, 1889.

Station.	Height.	Wet Days.	Rainfall.	Max. Month.		Min. Month.	
Northern Seaboard—	Ft.		In.		In.		In.
Boobyalla	...	103	36·04	Nov.	10·39	Feb.	0·67
Low Head	25	129	33·12	June	8·49	July	0·54
Launceston	67	126	32·98	,,	5·84	Feb.	0·72
Latrobe	...	103	44·17	,,	11·69	,,	0·57
Emu Bay	...	135	37·45	,,	7·77	,,	0·48
Circular Head	64	191	36·09	,,	8·25	,,	0·74
Black River	...	181	46·20	,,	10·78	,,	0·91
Windermere	...	132	39·92	,,	8·71	,,	0·68
Eastern Seaboard—							
Falmouth	30	99	38·98	Nov.	11·67	March	0·34
Swansea	...	100	45·21	,,	12·21	Feb.	0·54
Sorell	...	127	37·66	June	8·78	March	0·26
Clarence Plains	...	139	29·89	,,	7·13	,,	0·27
Botanical Gardens, Hobart	...	131	28·16	,,	8·57	,,	0·51
Mount Nelson	...	139	34·58	,,	9·31	Aug.	0·66
Franklin	...	143	32·28	,,	7·84	Jan.	0·82
Carnarvon	...	168	52·66	,,	12·10	March	1·27
Eaglehawk Neck	...	148	43·16	,,	12·55	,,	0·42
Hobart	190	180	30·80	,,	8·15	,,	0·72
Southport	...	187	50·36	April	8·96	May	2·28
Kellevie	...	158	52·26	June	14·04	March	0·60
Western Seaboard—							
Cape Grim	...	190	41·83	June	8·01	March	1·12
Corinna	15	217	72·96	,,	9·43	Feb.	2·56
Inland (Western)—							
Castra	...	175	66·93	,,	14·18	July	1·26
Mount Bischoff	2000	...	81·87	,,	12·02	Feb.	4·08
Inland (Eastern)—							
Longford	...	71	27·05	Oct.	4·77	,,	0·15
Avoca	...	147	30·11	,,	5·69	,,	0·41
Ross	...	117	23·64	Nov.	5·41	March	0·18
Oatlands	1337	110	29·37	June	8·71	,,	0·18
Fingal	...	137	39·11	,,	8·48	,,	0·07

RAINFALL—*continued.*

Station.	Height.	Wet Days.	Rain-fall.	Max. Month.		Min. Month.	
Inland (Eastern)—	Ft.		In.		In.		In.
Hamilton	...	102	20·23	June	3·47	Aug.	0·53
Gould's Country	...	121	69·32	Nov.	19·50	Feb.	0·93
Dog's Head, Lake Sorell	...	112	46·32	June	13·70	March	0·67
Campbell Town	...	109	26·48	Nov.	5·30	March	0·26
Bothwell	...	104	27·18	June	6·22	Aug.	0·69
Glenora	...	139	23·29	,,	5·30	July	0·58
Deloraine	...	133	47·99	,,	8·95	Feb.	0·60
Scottsdale	...	120	50·12	,,	9·36	July	1·26
Bagdad	...	130	27·07	,,	6·29	Aug.	0·69

The great difference between the rainfall in the eastern and western parts of the Island is very remarkable, reaching as high as 81·87 inches (Mount Bischoff) in the latter; the highest in the eastern part is 69·32 (Gould's Country). Generally, the greatest amount of rainfall occurs in June and July, and the least in February and March.

It will be observed that the greater portion of the Island—the region of settlement—is characterised by a remarkably mild and equable temperature, between the extremes of 20·0° to 34·0° in winter, and 78·0° to 96·3° in summer; and the rainfall, except in the wild sub-alpine mineral regions of the west, is moderate and regular.

The meteorological observations at Hobart for over 50 years show little variation from year to year. A mean of 35 to 40 years gives the following results per year:—

Atmospheric pressure	29·849 inches.
Mean temperature	55·10 deg.
Humidity of air	0·74 per cent.
Rainfall	143 days.
	22·93 inches.

The following table shows comparatively the meteorological conditions of various cities in Australasia and elsewhere:—

METEOROLOGICAL CONDITIONS OF AUSTRALASIAN CITIES.

Mean Yearly Average.

	Mean Atmo-spheric Pressure.	Temperature in Shade.			Rainfall.	
		Mean.	Max.	Min.	Days.	Inches.
Brisbane	30·090	67·70	99·3	39·4	130	33·07
Perth	30·084	64·00	105·0	34·0	106	25·04
Adelaide	30·106	63·00	106·8	33·7	141	18·85
Sydney	30·124	62·50	106·9	36·8	...	50·10
Melbourne	29·940	57·30	105·0	30·2	131	25·75
Hobart	29·891	55·1	96·3	32·0	180	30·80
London (Greenwich)	29·744	47·80	92·2	15·5	142	19·86
Dublin	30·015	49·35	78·9	23·1	160	16·60
Quebec	...	38·16	91·2	28·2	...	45·56

Rivers, Lakes, Mountains, Bays and Harbours, Capes and Promontories, and Islands.

If an imaginary line be drawn through the Island coincident with the 146·5° meridian of east longitude, it would cut through the 42° of south latitude, in the elevated centre of the Island, near Lake Fergus. Taking these lines as boundaries for marking the distribution of rivers, lakes, &c., the Island would be divided into four principal divisions—North-Western, North-Eastern, South-Western, and South-Eastern. By this arrangement a fairly comprehensive list of the more important topographical matters may be concisely tabulated, whilst securing some notion of distribution.

RIVERS HAVING THEIR EMBOUCHURES IN THE VARIOUS DIVISIONS, WITH THEIR TRIBUTARIES AND LAKES.

River.	Affluents.		Embouchures.
	Tributary Rivers.	Lakes.	
North-Western Division.			
Northern Slope, from Port Frederick to Cape Grim.			
Mersey	Fish R., Fisher's R., Lobster Rt., Minnow R., Dasher R., Caroline Ck.	Adelaide	Port Frederick
Don	...	...	Don mouth
Forth	Dove R., Lea R., Wilmot R.	L. Belvoir	Port Fenton
Gawler	...	...	Ulverstone
Leven	...	...	
Penguin	...	...	Penguin
Blyth	...	...	Blyth mouth
Emu	...	...	Emu Bay
Cam	...	...	Port Maldon
Inglis	Calder R., Flowerdale R., Black Fish Ck.	...	Wynyard
Detention	...	...	Pebbly Bay
Black River	...	...	Sawyer's Bay
Duck	...	...	Duck Bay
Montagu	...	...	Montagu
Welcome	...	...	Welcome R. mouth
Western Slope, from Cape Grim to Little Henty.			
Arthur	Waratah R., Wandle R., Hellyer R., Gunn R., Rapid R., Hilder R., Wey R., Horton R., Leigh R., Balfour R., Frankland R.	...	Arthur R. mouth
Nelson	...	...	Nelson mouth
Lagoon	...	...	Lagoon mouth
Pedder	...	...	Pedder mouth
Interview	...	...	Interview mouth
Pieman	Canning R., Bluff R., Murchison R., Brougham R., Fury R., Sophia R., Mackintosh R., Hadfield R., Coldstream R., Wilson R., Huskisson R., Castray R., Heazlewood R., Whyte R., Savage R., Donaldson R.	L. Augusta	Corinna

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River.	Affluents.		Embouchures.
	Tributary Rivers.	Lakes.	
SOUTH-WESTERN DIVISION.			
South-Western Slope, from Little Henty River to New River.			
Little Henty	...	...	Little Henty mouth
Henty	Badger R.	...	Henty mouth
Burgess	...	...	Macquarie Harbour
King	North Eldon R., South Eldon R., Princess R., Nelson R., Queen R.	L. Rolleston, L. Dora, L. Spicer, L. Beatrice	Macquarie Harbour
Gordon	Boyes R., Adams R., Boyd R., Wedge R., Denison R., Serpentine R., Sprent R., Cardigan R., Scarlett R., Balaclava R., Inkerman R., Alma R., Loddon R., Acheron R., Jane R., Franklin R.	L. Undine, L. Dixon, *L. Pedder*, L. Maria	Macquarie Harbour
Hibbs	...	...	Hibbs mouth
Spero	...	...	Spero mouth
Wanderer	...	...	Wanderer mouth
Mainwaring	...	...	Mainwaring mouth
Rocky	...	...	Rocky mouth
Rocky Point	...	...	Rocky Point mouth
Giblin	...	...	Giblin mouth
Davey	Hardwood R., Pine R., Crossing R., De Witt R.	...	Port Davey
Old	...	...	Port Davey
North	...	...	Port Davey
Spring	...	...	Port Davey
SOUTH-EASTERN DIVISION.			
South-Eastern Slope, from New River to Great Swanport.			
New River	...	...	New River mouth
Lune	...	...	D'Entrecasteaux Channel
Esperance	...	...	D'Entrecasteaux Channel
Huon	Anne R., Craycroft R., Picton R., Weld R., Arve R., Russell R., Mountain R., Sandfly Rt., Agnes R.	L. Edgar	D'Entrecasteaux Channel
Snug	...	...	D'Entrecasteaux Channel
North-west Bay River	...	...	D'Entrecasteaux Channel
Derwent	Pine R., Little Pine R., Nive R., Clarence R., Florentine R., Repulse R., Broad R., Dee R., James R., Ouse R., Shannon R., Clyde R., Russell's Falls R., Styx R., Plenty R., Lachlan R., Sorell R., Jordan R., Brown's R.	*L. St. Clair*, L. Ina, L. George, L. Ada, L. Pillan, L. Fergus, *L. Echo*, *Great Lake*, *L. Sorell*, *L. Crescent*, L. Tiberias	Storm Bay
Coal	...	...	Frederick Henry Bay
Carlton	...	...	Frederick Henry Bay
Prosser's	...	...	Spring Bay
Little Swanport	...	...	Little Swanport
Meredith	...	...	Oyster Bay
Swan	Brushy R., Wye R.	...	Oyster Bay
Apsley	...	...	Oyster Bay

River.	Affluents.		Embouchures.
	Tributary Rivers.	Lakes.	
North-Eastern Division.			
Eastern Slope, from Great Swanport to Eddystone Point.			
Douglas	...	...	Douglas R. mouth
Scamander	...	...	Scamander R. ,,
George's	...	...	George's Bay
Anson's	...	...	Anson's Bay
Northern Slope, from Eddystone Point to Port Frederick.			
Great Mussel	...	...	Poole
Roe			
Ringarooma	Dorset R., Cascade R., Weld R., Frome R., Winiford R.	...	Ringarooma Bay
Boobyalla	...	...	
Tomahawk	..	...	
Brid	Great Forester	...	Anderson's Bay
Piper's	...	...	Noland Bay
Tamar	South Esk R., Break o' Day R., St. Paul's R., Elizabeth R., Macquarie R., Blackman's R., Lake R., Nile R., Meander R., Liffey R., St. Patrick's R., North Esk R., Supply R.	*Arthur's Lakes*, Woods' Lake, L. Tooms	Port Dalrymple
Rubicon	...	...	Port Sorell

The principal Rivers on the Northern Slope are the Tamar and Mersey.
" " " " Western " " Pieman and Gordon.
" " " " Eastern " " Derwent and Huon.

The Tamar is navigable for large steamers to the Port of Launceston, a distance of 40 miles from the Tamar Heads. The Derwent is considered to be one of the finest harbours in the Southern Hemisphere, and is navigable for 22 miles beyond Hobart, the capital. Hobart is situated in one of the fine wide upper reaches of the estuary, at a distance of about 40 miles inland from the bold open approach at Storm Bay, and its port is regularly visited by the largest steamers of the Australian line. Both the Gordon and Pieman are navigable for many miles from their mouths for ships of fair size.

PRINCIPAL MOUNTAINS (2500 feet and upwards), 50.

North-Western Division—

	Height.	County.
Cradle Mountain	5069	Lincoln
Eldon Range	4789	Montagu
Ironstone Mountain	4736	Westmorland
Black Bluff	4381	Devon
Mount Roland	4047	,,
Gould's Sugar-loaf	3972	Lincoln
Mount Dundas	3922	Montgomery
Mount Ramsay	3810	Russell
Valentine s Peak	3637	Wellington
Parson's Hood	2849	Russell
Mount Bischoff	2598	,,

PRINCIPAL MOUNTAINS—*continued.*

	Height.	County.
SOUTH-WESTERN DIVISION—		
Frenchman's Cap	4756	Westmorland
Mount Hugel	4700	Lincoln
Wyld's Craig	4399	Franklin
King William I.	4360	"
Mount Picton	4340	Arthur
Mount Hobhouse	4031	Franklin
Mount Read	3890	Montgomery
Arthur Range	3668	Arthur
Wilmot Range	3483	"
Brady's Sugar-loaf	3361	Cumberland
Bathurst Range	2626	Kent
NORTH-EASTERN DIVISION—		
Ben Lomond	5010	Cornwall
Mount Barrow	4644	Dorset
Brady's Look-out	4497	Westmorland
Dry's Bluff	4257	"
Miller's Bluff	3977	Somerset
Mount Victoria	3964	Dorset
Ben Nevis	3910	Cornwall
Row Tor or Mount Arthur	3895	Dorset
St. Paul's Dome	3368	Cornwall
Snow Hill	3175	Glamorgan
Mount Nicholas	2812	Cornwall
Mount St. John	2550	Glamorgan
SOUTH-EASTERN DIVISION—		
Field West	4721	Buckingham
Field East	4167	"
Mount Wellington	4166	"
Collins' Bonnet	4131	"
Adamson's Peak	4017	Kent
La Perouse	3800	"
Mount Penny	3782	Westmorland
Table Mountain	3596	Somerset
Mount Franklin	3597	"
Mount Dromedary	3245	Monmouth
Woods' Quoin	3033	"
Blue Hill	2922	Cumberland
Grey Mountain	2713	Buckingham
Mount Connection	2630	Glamorgan
Brown Mountain	2598	Pembroke
Black Tier	2544	Monmouth

PRINCIPAL BAYS, HARBOURS, CAPES, AND PROMONTORIES.

Bays and Harbours.	Capes and Promontories.
WEST COAST—*Cape Grim to South-East Cape.*	
Valley Bay, Studland Bay, Calm Bay, Nettley Bay, Arthur River, Native Well Bay, Granville Harbour, Pieman River, Trial Bay, MACQUARIE HARBOUR, Mainwaring Cove, Mainwaring Inlet, Elliott Cove, PORT DAVEY, Ketchen Bay, New Harbour, Cox Bight, Louisa Bay, New River Inlet, South Cape Bay.	CAPE GRIM, Bluff Point, Green Point West Point, Second Bluff Point, Sundown Point, Ordnance Point, Sandy Cape, CAPE SORELL, POINT HIBBS, Rocky Point, Point St. Vincent, Pollard Point, Hilliard Head, SOUTH-WEST CAPE, SOUTH CAPE, SOUTH-EAST CAPE.

PRINCIPAL BAYS, HARBOURS, CAPES, AND PROMONTORIES—*continued.*

Bays and Harbours.	Capes and Promontories.
EAST COAST—*South-East Cape to Eddystone Point.*	
D'ENTRECASTEAUX CHANNEL, (Recherche Bay, Southport, Port Esperance, Port Cygnet, North-West Bay, Barnes' Bay, Great Bay, Isthmus Bay, Little Taylor's Bay, Great Taylor's Bay), Cloudy Bay, ADVENTURE BAY, Variety Bay, Trumpeter Bay, Bull Bay, Ralph's Bay, STORM BAY, FREDERICK HENRY BAY, Norfolk Bay, Wedge Bay, Tunnel Bay, PORT ARTHUR, Fortescue Bay, Pirates Bay, Wilmot Harbour, North Bay, Blackman's Bay, Marion Bay, Reidle Bay, SPRING BAY, Okehampton Bay, Grindstone Bay, Little Swanport, Oyster Bay, Cole's Bay, Wineglass Bay, Sleepy Bay, Bluestone Bay, Half-moon Bay, Maclean's Bay, GEORGE'S BAY, Skeleton Bay, Boat Harbour, Bay of Fires, Anson's Bay.	Whale Head, BRUNI HEAD, TASMAN'S HEAD, Cape Conella, CAPE FREDERICK HENRY, CAPE RAOUL, CAPE PILLAR, Cape Hauy, Cape Surville, Yellow Bluff, Humper's Bluff, Cape Frederick Hendrick, Cape Paul Lamanon, Cape Peron, Cape Bald, Cape Mistaken, RAGGED HEAD, Cape Boulanger, Cape Bougainville, Cape Bailly, SCHOUTEN ISLAND, Cape Forstier, Cape Tourville, Cape Lodi, Peggy Point, Long Point, Picanini Point, Helen's Point, Grant's Point, EDDYSTONE POINT.
NORTH COAST—*Eddystone Point to Cape Grim.*	
Ringarooma Bay, Croppie's Bay, Anderson's Bay, Noland Bay, Tam o'Shanter Bay, PORT DALRYMPLE, PORT SORELL, PORT FREDERICK, Port Fenton, Preservation Bay, Emu Bay, Port Maldon, Freestone Cove, Jacobs' Boat Harbour, Pebbly Bay, Brickmakers' Bay, Half-moon Bay, West Bay, Duck Bay.	Cape Naturaliste, CAPE PORTLAND, WATERHOUSE POINT, East Double Sandy Point, West Double Sandy Point, Stony Head, Five-mile Bluff, Low Head, West Head, Badger Head, Point Sorell, Tea Tree Point, Blackman's Point, TABLE CAPE, ROCKY CAPE, CIRCULAR HEAD, North Point, West Point, CAPE GRIM.

The more important Bays and Harbours, &c. are indicated by small capital letters.

PRINCIPAL ISLAND DEPENDENCIES.

	Area in Acres.
North-East Group, Bass' Strait—	
Flinders'	513,000
Cape Barren	110,000
Clarke's	20,000
Kent's Group and others	27,000
North-West Group—	
King's	272,000
Robbins'	24,500
Three Hummocks	19,000
Hunter's	18,400
Walker's	1700
Others	1900
East Coast—	
Schouten	7000
Maria	24,000
Bruni	90,000
All others in the South	2500
	1,131,000

AREA OF TASMANIA.

	Acres.
Tasmania, exclusive of Islands and Lakes	15,571,500
Islands	1,131,000
Lakes	75,500
Total Area	16,778,000

Towns and Cities.

THE total population of the Colony on 31st December, 1889, was estimated to be 151,480. With such a scanty population, therefore, there can be no large centres of population. The capital, Hobart, possessing a magnificent harbour, is beautifully situated near the mouth of the Derwent, in the south, and has a population of about 35,045 persons, including suburbs. Next in importance is the City of Launceston, situated on the Tamar, in the northern part of the Island, with a population of about 16,402 persons.* Of the remaining towns and townships there are only about 41, each having a population—at the time of the last census in 1881—ranging from 100 to 1720 persons respectively. The following table contains a list of the various places:—

	Population, 1881.	Situation.
NORTH-WESTERN DIVISION.		
Waratah	874	River Waratah
Latrobe	711	River Mersey
Torquay	370	Ditto
Stanley	332	Circular Head
Burnie	305	River Emu
Sheffield	263	River Dasher
Wynyard	168	River Inglis
Formby	162	River Mersey
Chudleigh	123	Lobster Rivulet
SOUTH-WESTERN DIVISION.		
Only two settlements—Strahan and Port Davey—situated in this division, both under 100 persons at the time of last census.		
NORTH-EASTERN DIVISION.		
Launceston, City, (1889)	16,402	River Tamar
Longford	1286	River South Esk
Westbury	1156	Quamby Brook
Campbell Town	948	River Elizabeth
Deloraine	836	River Meander
Evandale	564	River South Esk
Perth	478	Ditto
Lefroy	436	Near mouth River Tamar
George Town	299	Near mouth River Tamar
Carrick	285	River Liffey
St. Helen's	257	George's River
Fingal	247	River South Esk
Avoca	131	Ditto
Moorina	113	Ringarooma River
Cleveland	110	Near South Esk

* Launceston with suburbs has a population of about 17,157 persons.

	Population, 1881.	Situation.
SOUTH-EASTERN DIVISION.		
Hobart, City and Suburbs, (1889)	35,045	River Derwent
New Norfolk	1036	Ditto
Queenborough	795	Ditto
Oatlands	673	Lake Dulverton
Franklin	457	River Huon
Bothwell	454	River Clyde
Richmond	448	Coal River
Kempton	434	
Hamilton	387	River Clyde
Ross	353	River Macquarie
Pontville	329	River Jordan
Sorell	267	Pittwater
Swansea	244	River Meredith
Jerusalem	194	Coal River
Triabunna	129	Spring Bay
Lovett	115	River Agnes

Excepting Hobart and Launceston, whose population is estimated for the year 1889, the figures for the Census year 1881 are given. The present population of each place will, therefore, be greater generally by about 27 per cent.

CHAPTER II.

History.

SUMMARY OF LEADING EVENTS.

Year 1642. First Discovery.

THE first discovery of Tasmania was made on the 24th November, 1642, by the intrepid Dutch navigator, Abel Jans Tasman.

The Dutch were at this time in the zenith of their power, and their spirited commercial enterprise enabled them to command the maritime trade of a large portion of the globe, which trade, owing to the influence of the "Three great voyages," had rapidly expanded. The discovery of America by Columbus; the doubling of the Cape of Good Hope by Vasco de Gama; and, greatest of all, the circumnavigation of the globe by Magellan, gave a great impetus to maritime and commercial enterprise; and many European countries—especially the Spanish, Dutch, French, and English—vied with each other in promoting maritime discovery, in the hope of extending their trade and commerce by the possession of newly discovered lands.

It is undoubtedly this spirit which animated Anthony Van Diemen, Governor-General of the Dutch Settlement in Batavia in the Island of Java—when, in continuation of previous expeditions, he issued the command to Abel Jans Tasman to proceed to further explore

the vaguely known "Great South Land"—a name by which the region of New Holland or Australia was alone known up to the year 1665.

Accordingly, on the 14th of August, 1642, Tasman embarked at Batavia on board the *Heemskirk*; the fly-boat *Zeehan*, Jerit Zanzoon master, in company. Mauritus, discovered in the year 1505 by Don Pedro Mascarequas, was now also in the possession of the Dutch, and thence Tasman first directed his expedition. Leaving the Mauritius on the 8th of October of the same year, they proceeded in an easterly direction in quest of the "Great South Land," and after various experiences, the first pilot, supported by the steersman, gave the following advice:—"We should keep to the 44° south latitude until we have passed 150° longitude; then make for latitude 40° south, and keeping in that parallel to run eastward to 220° longitude, and then steering northwards, search with the trade wind from east to west for the Solomon Islands. We imagine if we meet with no mainland till we come to 150° longitude we must then meet with islands." This judgment proved to be very correct, for soon after the compasses were so disturbed that they inferred the neighbourhood of land, and on the 24th of November, at 4 o'clock P M., they sighted land—Point Hibbs, a remarkable limestone promontory, now so well known on our Western Coast, a little to the south of the entrance to Macquarie Harbour, which was only discovered in 1816, or 174 years later. In the evening of the same day they observed lofty mountains rising inland east-south-east and to the north-east. These mountains, long after were named Heemskirk and Zeehan by Captain Flinders, in commemoration of the names of Tasman's vessels. It is of additional interest that the recent remarkable discoveries of tin and silver should have been made in the vicinity of the lofty eminences which attracted the attention of the first discoverers of Tasmania, who originally gave it the name of "Anthony Van Diemen's Land," in honour of the Dutch Governor-General of Batavia. Tasman sailed round the southern extremity of the Island, sighting several islands, including those known as the Mewstone, Swilly, and Eddystone. Tasman also named one of the smaller groups the Boreels, in honour of the Council of India. After partly ascending Storm Bay the vessels came to an anchor in the afternoon of 1st December in a good port (marked Frederick Hendrik Bay in the chart, but now better known as Marion Bay, leading up to the southern head of East Bay Neck). Here those in boats despatched to the shore observed evidences indicating the presence of the natives. They saw that some of the larger trees were notched by flintstone to facilitate climbing, as was supposed for birds' nests (more probably for opossums); and two days later Tasman's carpenter swam ashore in a little bay to the south-east of their former anchorage, and near four remarkable trees, standing in the form of a crescent, he erected a post on which a compass was carved, and left the Prince's flag (Frederick Henry) flying upon it.

After sailing along the East Coast, to parts of which they gave the names by which they are still known—notably *Maria Island*, in honour of a member of Van Diemen's family; *Schouten Island*, in honour of the Dutch commander who first rounded Cape Horn in

1610—they finally lost sight of land, the last notable object observed being St. Patrick's Head. Tasman then steered to New Zealand, also one of his discoveries, and finally reaching his original point of departure, Batavia, the sturdy navigator was enabled to place on record the marvels of his remarkable voyage, which, with characteristic devotion, he closes with "God be praised for this happy voyage! Amen."

1772.

For more than a century after its discovery by Abel Jans Tasman, no European had invaded its solitudes until 4th March, 1772. The French navigator Marion du Fresne anchored his ships, the *Mascarin* and the *Castries*, in the Frederic Hendric Bay of Tasman, now marked on the maps Marion Bay. Captain Marion remained there six days, landed, and attempted to establish intercourse with the natives, but this resulted in an encounter, in which the first Tasmanian aborigine fell under the fire of European muskets.

1773 (March 9).

In the following year—9th March, 1773—the Island was next accidentally visited by an English ship (the *Adventure*), commanded by Captain Tobias Furneaux. The ship cast anchor in the bay which now bears its name. No natives were seen, but their fires were observed along the shore.

1777 (January 26).

The ships *Resolution* and *Discovery* (Cook's third and last expedition) entered Adventure Bay. Captain Cook and party landed, and soon after fell in with a party of natives, with whom they had some intercourse.

1788 (January 20).

The English ships *Sirius* and *Supply*, accompanied by three store ships and six transports, carrying 7000 persons, first anchored at Botany; but finding this place unsuitable, the colony was transferred to Port Jackson, which magnificent harbour was then fortunately discovered. This was the first colony established in Australasia.

1789 (July 3).

Captain John Henry Cox, in the brig *Mercury*, sailed inside the Schouten and Maria Islands, and discovered Oyster Bay.

1789.

Lieutenant Bligh, on his way to Tahiti, touched at several places on the south-east coast. Spent twelve days at Adventure Bay, where he observed an English record engraved upon a tree—"A.D. 1773." At Frederick Henry Bay he had an interview with the natives.

Robert Brown, the eminent botanist, accompanied Lieutenant Bligh in this expedition.

1792.

Lieutenant Bligh a second time visited the south of the Island, where he planted several trees. This was subsequent to the mutiny of his crew, some of whose descendants still occupy the Pitcairn Islands.

A portion of the inhabitants of these islands were afterwards transferred to Norfolk Island by the British Government, the resources of their original home being too limited to supply the wants of their increasing numbers.

1792-1793.

The year 1792 is also memorable by the visit of the illustrious French navigator, Rear-Admiral Bruny D'Entrecasteaux, in the *Recherche*, and Captain Huon Kermandec in the *Esperance*. Excellent surveys were made in Storm Bay. D'Entrecasteaux made a second visit in January, 1793, for the purpose of completing surveys. The names of the ships and commanders, by which the many islands, bays, channels, and mountains in the south are known, still bear witness to their important investigations.

Labillardière, the illustrious botanist, accompanied this expedition.

1794.

Captain Hayes, in command of the ships *Duke of Clarence* and *Duchess*, entered the Derwent, which he so named. He was then unaware of the visit of D'Entrecasteaux, who had previously discovered this river and named it "Rivière du Nord."

1798.

The sloop *Norfolk* sailed from Port Jackson, under the command of Lieutenant Flinders, with the express object of demonstrating the insular character of Van Diemen's Land. He was accompanied by Dr. Bass, who had already discovered the strait now known by his name. The following names given to places along the North and West Coasts indicate the extent of their observations; viz.—Cape Portland, Waterhouse Island, Tamar River, Green Island (Tamar), West Arm, Middle Island, Whirlpool Reach, Swan Point, Long Reach, Point Rapid, Crescentshore, Table Cape, Rocky Cape, Circular Head, Trefoil Island, Hunter's Island, Cape Grim, Mount Heemskirk, Mount Zeehan, Point Hibbs. Entered the Derwent on 18th December, where the party fell in with some of the natives, with whom they had communication. Leaving the Derwent on 31st December, the party proceeded by the eastern coast to Sydney, thus effecting the first circumnavigation of the Island.

1799.

Port Phillip discovered by Captain Murray.

1802.

Another French expedition visited the Island under Commodore Baudin, consisting of the ships *Géographe* and *Naturaliste*, with the corvette *Casuarina*.

A careful survey was made of the east coast. Monge, the surgeon, died here, and was buried at Maria Island. Géographe Strait was named in honour of the Commodore's ship; Freycinet's Peninsula in honour of Lieutenant Freycinet. Peron, the eminent naturalist, who afterwards wrote a history of the expedition, gives an interesting account of their intercourse with the natives.

1803. First Settlement formed in Tasmania.

On the 12th September Lieutenant John Bowen, acting under instructions from Governor King, of New South Wales, arrived in the *Albion*, and landed at Risdon, where he formed the first settlement in Tasmania. The *Lady Nelson* with rest of establishment had arrived in Risdon Cove 7th September.

The Tamar was also visited in the same year by Superintendent Collins, in the *Lady Nelson*, by order of Lieutenant-Governor Collins, then at Port Phillip. Superintendent Collins, on his return, reported unfavourably of the Tamar (Port Dalrymple) as a place of settlement.

1804.

The site of Hobart, in Sullivan's Cove, fixed upon as a town by Governor Collins. The party (conveyed in the ships *Ocean* and *Lady Nelson*), left Port Phillip on 30th January, and arrived in the Derwent on 15th February. Collins was dissatisfied with the location at Risdon, preferring the southern shore; and soon after (20th February) he fixed upon Sullivan's Cove, where he landed and pitched his tents.

Colonel Paterson, acting under instructions from Governor King, of New South Wales, landed at George Town, in the Tamar, in October, 1804, and fixed the site of a town; but the head-quarters were soon after removed to York Town.

The system of assigning convicts to free settlers was established this year by Governor King.

The first unfortunate affray with the natives occurred at Risdon. Many natives were killed and wounded. To this affray may be ascribed all the subsequent troubles with the aboriginal tribes.

1805.

Part of the settlers from Norfolk Island removed to Tasmania, taking up locations chiefly at Hobart, Pittwater, New Norfolk, and Norfolk Plains.

1806-1807.

The settlement at York Town was removed (1806) by Colonel Paterson to the spot where the City of Launceston now stands. The town he named in honour of Governor King's birth-place in England. The river was also named the Tamar, after a Cornish stream.

Settlers in the Island, as well as in New South Wales, were reduced to a state of famine, firstly, owing to the destruction of the crops and live stocks caused by a heavy flood in the Hawkesbury, this river having risen to the height of sixty to eighty feet in a few hours; secondly, owing to failure of the following season's crop of wheat.

1808.

The famine still continuing, the settlements were bordering on absolute starvation. Wheat rose to £4 per bushel, equal to about £200 per ton.

1810.

The famine still continuing, the Government were at last unable to feed the prisoners, and in order to save their lives they were permitted to roam at liberty in search of wild animals and other food. During the year, however, relief came by the arrival of a cargo of wheat from India.

In the early part of this year the first newspaper printed in the Colony appeared, under the title of the *Derwent Star and Van Diemen's Land Intelligencer*. It was issued fortnightly at *two shillings* a copy, but it soon expired owing to want of funds. Governor Collins died suddenly at Hobart, on the 24th March, 1810.

1811 (February 4).

Colonel Davey appointed second Lieutenant-Governor.

1812.

Settlements on the Tamar and Derwent united under one government. Formerly these settlements were independently governed.

1814.

Second attempt to establish a newspaper was made, under the title *Van Diemen's Land Gazette*, but it soon collapsed for want of support. The first Court, styled the "Lieutenant-Governor's Court," was established. Its jurisdiction was restricted to personal matters under the value of £50. All other cases, civil and criminal, were tried in Sydney. Bushrangers were now beginning to spread terror among the settlers throughout the Island.

1815.

Captain James Kelly explored the southern, western, and northern coasts, and made many important discoveries, chief among which were Port Davey and Macquarie Harbour, so named by him. His party on arriving at George Town were at first mistaken for bushrangers.

1815-1816.

Agriculture progressed so far that the Colony was able to export nearly 15,000 bushels of wheat to Sydney. The first flour-mill was erected at this time.

1816.

The *Hobart Town Gazette*, edited by Andrew Bent, established. The difficulties of this first literary enterprise are indicated by the curious notice that subscribers three years in arrears are strongly urged to deliver wheat in payment at once, to save proceedings being taken.

1817.

The foundation stone of the first church in the Colony (S. David's, Hobart) was laid by Governor Davey. Soon after (April) Colonel Davey ceased to administer the Government. His successor, Colonel William Sorell, took control on his arrival on the 8th April; the population then numbering 3114 persons.

Hobart, at this time, had a population estimated at 1000 souls, and the houses are described as for the most part a collection of mean-looking wooden huts. No schools had yet been established in the Island. Free immigrants now began to make their appearance in considerable numbers, including many retired officers of the army and navy, besides gentlemen of moderate capital, who were attracted by the facilities offered to them for settlement in the shape of free grants of land. The finest parts of the agricultural areas were alienated at this time.

1820.

The first important importation of pure merino lambs (300) arrived, obtained from flocks of Captain John Macarthur, of Camden, New South Wales; originally derived from the Royal flock of pure merinos at Kew.

1821 (December).

Penal settlement established at Macquarie Harbour.

1822.

St. David's Church, Hobart, completed. First clergyman, the Rev. Robert Knopwood, who arrived in the Colony with Collins' fleet in 1804.

1824.

Governor Sorell's administration ceased, and his successor, Lieut.-Colonel George Arthur, arrived in Hobart on the 12th May, 1824. On the 24th May the first session of a Supreme Court was opened, on the arrival of Judge Pedder from England with the charter.

1825-1826.

Van Diemen's Land was proclaimed an independent colony. Hitherto the local Governor was subordinate to the Governor of New South Wales. The Government established locally consisted of two Councils appointed by the Crown,—one, the Executive, comprising four members; the other, the Legislative, having seven members. The functions of the former were to advise the Governor, and those of the latter to frame the laws.

After a life of ten years, Bent's *Hobart Town Gazette and V.D.L. Advertiser* ceased to exist. The *Hobart Town Gazette* was soon afterwards issued as a Government publication. The *Colonial Times* was first issued on 19th October, 1825, limited to advertisements.

1827.

Mr. Henry Hellyer explored the country along the Arthur and Hellyer Rivers, also the country named by him Surrey and Hampshire Hills. Liberty of the press suppressed by Governor Arthur. Bent imprisoned for a month for publishing an advertising sheet. Governor Arthur's action in this matter caused general dissatisfaction.

1828.

Van Diemen's Land Company (sheep farming) commenced operations on a block of 250,000 acres in the north-west part of the Island, which was conditionally granted to the Company by charter, passed on 9th November, 1825. The country around Emu Bay and Circular Head was explored on behalf of the Company this year, and an addition of 100,000 acres was made to the Company's original grant. About this time also another company of capitalists was formed—the Van Diemen's Land Establishment—who received a grant of 40,000 acres of land in the Norfolk Plains District for agricultural and stock-breeding purposes, and large importations of improved breeds of horses, sheep, and cattle were made. The Council was increased in number by a new Constitution Act. The *Tasmanian and Austral-Asiatic Review* established in Hobart Town in February, 1828—editor, Robert Lathrop Murray.

1829.

Two newspapers were started in Launceston. The *Cornwall Press*, edited by Mr. S. Dowsett, soon collapsed; but the *Launceston Advertiser*, established by John Pascoe Fawkner, and edited by Mr. Henry Dowling, became a useful and popular journal.

1830.

Owing to the depredations of the natives, the movement known as the Black Line was organised, at an expense of £30,000, with the object of forcing all the natives into Tasman's Peninsula; but the result was a complete failure, the only capture being one man and a boy.

1830-1835.

What force could not effect in gathering the natives into one place was achieved marvellously within five years by the benevolence and friendly suasion of one man (the celebrated George Augustus Robinson). There were only 203 survivors in the final gathering of the natives into the settlement prepared for them on Flinders' Island.

1834-1837.

The first settlement within the Colony of Victoria was made by the two Messrs. Henty, of Launceston, Tasmania, in the year 1834. These founders of this important colony first occupied the country round Portland Bay with flocks of sheep. They also tilled the soil and produced cereals for their own consumption. The plough used by the Messrs. Henty in turning the first sod of Victorian soil was preserved, and was exhibited as an interesting relic at the Melbourne International Exhibition of 1880-81. Launceston also had the honour of originating the two expeditions following that of the Hentys, which first permanently occupied Port Phillip. The first of these—Batman's party—arrived on 29th May, 1835, in the *Rebecca*, and made their headquarters at Indented Head; the second, organised by Mr. J. P. Fawkner, entered the Yarra on 28th August, 1835, and moored their vessel, the *Enterprise*, to the trees which grew on the banks of the river, where the great city of Melbourne now stands. A brisk trade was soon opened up between the two colonies, and a large migration of Tasmanians, with their flocks, herds, and implements, soon set in in favour of the newly-founded Colony. Thus, the honour of founding the colony of Victoria is due to Tasmanian enterprise.

The progress made within the colony of Tasmania was very marked during Governor Arthur's rule. In 1835 the means of internal communication was wonderfully improved. The mail cart twice a week now made the journey between Hobart and Launceston—121 miles—in 19 hours. In 1824 the mails were carried by foot post once a fortnight. There were now established throughout the Colony—with a population of 40,172 persons—29 schools, with an attendance of 1177 children. There were also 18 places of worship, as compared with four on the arrival of Governor Arthur. Bushranging, formerly so common, was now almost unknown.

About this time Macquarie Harbour was abandoned, and the prisoners were removed to the new settlement established at Port

Arthur, on Tasman's Peninsula, where they were treated with less rigour. Large gangs of convicts were being employed in the formation of roads and bridges throughout the Colony—notably the Bridgewater Causeway and the Hobart Town and Richmond Road.

Governor Arthur's governorship terminated on the 31st October, 1836, on which day he embarked for England. The duties of Acting-Governor were then vested in Lieutenant-Colonel Kenneth Snodgrass, who continued in office for two months and six days.

1837-1843.

Sir John Franklin arrived in Hobart, and assumed the governorship of the Colony, on the 6th day of January, 1837. He was enthusiastically received by the colonists. Although the new Governor was highly esteemed personally, he encountered great difficulties in administering the government of a Colony amid the discordant elements of party strifes arising out of the unhappy condition of a mixed society of free colonists and the officials of penal institutions. His efforts, humanely directed to promote harmony and good government, met with indifferent success. In all matters tending to promote higher education and improvement in social condition he took a prominent part, and was eminently successful. He was the founder, and first President, of the existing Royal Society of Tasmania. The earliest meetings of this body, then styled *The Tasmanian Society*, were held once a fortnight in the Library of Government House, where papers were read on scientific and philosophical subjects. In the year 1841 the first publication of the Society appeared, under the title of *The Tasmanian Journal of Natural Science* (now changed to *Papers and Proceedinys of the Royal Society of Tasmania).* In an interesting introductory article written by the Rev. John Lillie, of St. Andrew's Church, Hobart, an ardent student of natural history, the author indicates the scope of the Society's aims, and in urging the claims of science as a means of culture, he states that, animated by " the conviction that they are now living at the fountain-head of what promises ere long to swell into a mighty stream of civilisation, they have been anxious to impress upon that stream, while it is yet susceptible of it, a salutary direction towards liberal and scientific pursuits. Our noble national Museum in Macquarie-street; the valuable scientific Library of the Royal Society; and the creditable position which that Society now holds among kindred Australian institutions as indicated by its yearly Proceedings, all bear witness that the impress then made has proved to be a valuable and lasting one.

Science and discovery soon after received additional impetus from the various scientific expeditions which visited the Island. The French warships, in their voyage of discovery in the Antarctic regions, visited Hobart Town in December, 1839. The *Erebus* and *Terror*, commanded by Captains Ross and Crozier, visited Hobart Town in November, 1840; and its illustrious botanist, Dr. Joseph Dalton Hooker, then, under the able guidance of our local naturalists, Ronald Gunn, F.R.S., and W. Archer, made a thorough investigation of the flora of the Island, which formed the basis of Hooker's magnificent work *The Flora of Tasmania.*

At the same time, the natural history and physical character of the Island were made more widely known by the travels and observations of the illustrious Count Strzelecki, a Polish nobleman. This indefatigable naturalist was hospitably entertained and encouraged by Sir John Franklin. He travelled 7000 miles on foot through the wilds of New South Wales and Tasmania, and his subsequently written account, *Physical Description of New South Wales and Van Diemen's Land*, still testifies to the wonderful amount of information by which the world has been enriched by his wide and careful explorations. At this time, also, Her Majesty's ship *Beagle* was occupied in examining the coasts and rivers of the Island. The naturalist attached to this vessel was the illustrious Charles Darwin, who gives an interesting account in his "Journal of Researches" of the geological features of Hobart Town and its neighbourhood. The geological features of the Island, however, received much closer attention from the well-known geologist James Beete Jukes, who accompanied H.M. survey ship *Fly*. This eminent geologist describes very fully the geological features of the Island as observed by him in his work published in the year 1850, entitled *A Sketch of the Physical Structure of Australia*.

Dr. Richardson, who accompanied Dr. Ross's expedition, also made a large collection of our fishes, which were afterwards described. Thus the study of the various branches of science received at this period a wonderful impetus from the visits of the various scientific expeditions named.

Sir John Franklin's retirement from the Government of the Colony, on 21st August, 1843, was in a large measure due to the unhappy differences between himself and the Colonial Secretary, Mr. John Montagu, who had been dismissed by Sir John Franklin for continued disrespectful conduct to himself as Governor. Soon after his retirement (1845) the frank and generous Sir John Franklin went forth in command of the ill-fated expedition (*Erebus* and *Terror*) for the purpose of discovering the North-West Passage. The fatal end of this memorable expedition is now too well known. A bronze statue, above life size, is now erected in his memory in Franklin Square, Hobart, near the spot where he formerly resided at old Government House.

1843-1847.

Sir John Franklin was succeeded as Governor by Sir John Eardley Eardley-Wilmot, Bart., who arrived in Hobart in August, 1843.

During the short term of Sir Eardley Wilmot's government the Colony was in a very disturbed condition, caused immediately in a large measure by the breaking up of the convict settlement at Norfolk Island and its transfer to Port Arthur. The free colonists were now becoming more and more alarmed at the growing proportions of the fixed penal establishments throughout the Island; and the agitation to put a stop to further importations of convicts from other parts of Her Majesty's dominions was most intense. Added to this, the local cost of maintaining such a large body of police and numerous gaols plunged the Colony into a debt of £100,000, which, with a diminishing revenue, caused the Governor to propose to raise the taxes on imports from 5 to

15 per cent. This proposal was strenuously opposed by the colonists and by the independent nominees forming the Council—six of whom resigned—resulting in a deadlock. The financial difficulty was afterwards overcome by a compromise; the Home Government agreeing to contribute £24,000 annually towards the maintenance of police and gaols.

1843.

In 1843 Dr. Francis Russel Nixon arrived in the Colony, having received the appointment of Bishop of Tasmania. The Colony had been created an independent diocese in the previous year. Mr. W. L. Kentish, engineer, while engaged in surveying new lines of road in the north-west part of the Island in the year 1844, discovered the open fertile plains now known by his name (Kentish Plains), and soon after the country now known as Clerke's Plains, further westward, was added to his discoveries.

1846.

In October, 1846, Sir Eardley Wilmot was suddenly recalled from the Government of the Colony, in consequence of secret accusations made against his private character. These accusations were repelled by the Chief Justice and 250 leading members of the community, but had no effect upon the Home Government. Sir Eardley Wilmot died soon after of a broken heart, in consequence of this cruel assault upon his character.

1847.

The Government of the Colony was administered by Mr. Charles Joseph Latrobe in the interval between the departure of Sir Eardley Wilmot and the arrival of Sir William Thomas Denison, Knight, on 25th January, 1847.

One of the first acts of the new Governor was the restoration of the "Patriotic Six" to their seats in the Council. During the term of Sir William Denison's Government the anti-transportation movement was vigorously maintained by the great body of the colonists, and its influence was greatly strengthened by the organisation of a League, which ultimately extended to all the colonies, and became a mighty power in the anti-transportation cause.

1850.

Coal discovered between the Don and Mersey Rivers in March, 1850, and soon after a similar seam of coal was found at Tarleton and the Don.

1850-1853.

The strenuous opposition of the League to further transportation at last began to bear fruit; for in the year 1850 a Bill was passed providing for the establishment of Legislative Councils in Tasmania, South Australia, and Victoria; the latter place having been created a separate colony by the same Act. It was further provided that one-third of the members of the Council were to be nominated by the Crown, and two-thirds to be elected by the people. The significance of this provision was made manifest by the election soon following, by which sixteen gentlemen were returned, nearly all of whom were pledged or opposed to further transportation of convicts to the Colony. The new Legis-

lative Council was summoned to assemble on 30th December, 1851, and its first divisions were taken on the subject of transportation; and a majority were successful in moving the adoption of an address to the Queen, remonstrating, strongly but respectfully, on the influx of criminals. The enthusiasm and perseverance of these reformers at last overcame all opposition; for, upon the Aberdeen Ministry coming into power, their first important act of office was to announce (through the newly-appointed Colonial Secretary, the Duke of Newcastle, in a despatch dated 14th December, 1852), that transportation had absolutely ceased. It was not, however, until May, 1853, that the official notification appeared in the *Hobart Town Gazette*. Great rejoicing throughout the Colony took place in consequence, and Wednesday, the 10th August, was chosen as a holiday to celebrate the joyful event. This period was also memorable as the fiftieth year of the Colony's history, dating from its foundation in 1803. It marked the beginning of a new era to the Colony. Van Diemen's Land, as a name, disappears, with its evil associations; the Colony thenceforward bearing the name TASMANIA, as a happy omen of the altered conditions in its history.

Other events also occurred about this time which had a most important influence in the ultimate development and progress of the Australasian Colonies. The most important of these was the discovery of gold in payable quantities by Hargreaves, in New South Wales, in the year 1851. The effect of this discovery gave a wonderful impetus to the search for gold in all the colonies; and within a month of the establishment of Victoria as an independent colony it became generally known that rich deposits of gold existed within its borders.

In the year 1852 the first payable gold was found in Tasmania, at the Nook, near Fingal; and about the same time it was also discovered at Tower Hill Creek and in the vicinity of Nine-Mile Springs. In the same year the practical working of the gold fields of New Zealand was first commenced. The extraordinary richness of the Victorian gold fields, however, eclipsed all other discoveries. Tasmania, by its proximity to them, was at once most wonderfully affected. All kinds of products reached fabulous prices, and were exported to Victoria in such quantities that the value of total exports in 1851 of £665,790, reached £1,509,883 in 1852, and £1,756,316 in 1853. Migration of population of all classes, from Tasmania to Victoria, at once set in in alarming numbers. In 1842 it is estimated that there were nearly 40,000 *adult males* in the Colony; but such was the migration to the Victorian gold fields in 1852, 1853, and 1854, that the *adult males left in the Colony were less than* 22,261. It is believed that the great body of ticket-of-leave men took advantage of this movement, as it gave them an opportunity of leaving a place which, however advantageous in other respects, was to them filled with many unhappy associations.

1854.

A Bill to grant retiring pensions to the Judges of the Supreme Court was passed on the 4th May, 1854. The same year Mr. Valentine Fleming, Attorney-General, was appointed Chief Justice in place of Sir John Pedder, who retired upon a pension.

Central Board of Education appointed, consisting of the Members

for the time being of the Executive and Legislative Councils. The number of Members of Council were increased from 24 to 33; one-third nominated by the Governor and two-thirds elected by the people. Sir William Denison retired from the Government of the Colony at the close of this year.

1855.

Early in January Sir Henry Edward Fox Young succeeded Sir William Denison as Governor, the Colony being then in a most prosperous condition, and large shipments of a superior class of immigrants (farm servants) arrived to fill the places of those who had left for the Victorian gold fields.

The Queen declared her assent to an "Act to establish a Parliament in Van Diemen's Land, and to grant a Civil List to Her Majesty." Tasmania was thus the first of the Colonies in the Australian group to receive the privileges of Local Representative Government.

1856.

Mr. Adye Douglas advocated a preliminary survey for a railway between Hobart Town and Launceston. Bill passed to enable the Launceston Corporation to supply the town with water.

The first Parliament, consisting of two Chambers of Representatives, both elective, were opened by Commission appointed by the Governor, on 2nd December, 1856. The Legislative Council was limited to 15 Members, and the House of Assembly was limited to 30 Members. (A list of successive Ministries is given elsewhere.) The first Ministry consisted of the following Members:—

Colonial Secretary and Premier...	William Thomas Napier Champ.
Colonial Treasurer	Thomas Daniel Chapman.
Attorney-General	Francis Smith.
Solicitor-General	John Warrington Rogers.
Minister of Lands and Works	Henry Frampton Anstey.
Without portfolio	William Edward Nairn.

1857.

The city of Hobart first lighted with gas. Launceston waterworks completed; water conveyed from St. Patrick's River, 13 miles distant. New Government House completed; cost about £120,000.

1858.

A Tasmanian University proposed by the Rev. R. D. P. Harris. Bill passed appointing a Council of Education, with power to confer the Degree of Associate of Arts; having also the gift of two Scholarships annually, each of the value of £200 per annum, tenable for four years at an English University.

1859.

Rural Muncipalities first established. State aid to religious bodies commuted: a Bill to raise a loan of £100,000 was passed to effect this object. First submarine cable laid, *viâ* Circular Head and King's Island, to Cape Otway. The cost was £42,000. This line, however, soon failed, owing to various defects in the cable, and to the nature of the bottom along which it was laid.

1860.

Gold quartz-crushing machinery erected at Fingal. Mr. Charles Gould appointed Government Geologist. Two exploring expeditions appointed by the Government to prosecute a search for gold and valuable minerals, one under Mr. Ronald C. Gunn, to examine the wild north-western country; the other under Mr. Gould, to examine the southern portion of the Island.

1861.

Sir Henry Young retired from the Government of the Colony on 10th December, 1861, and was succeeded by Colonel Thomas Gore Browne, C.B.

1863.

Two tons of Fingal coal sent to Launceston for experimental purposes, which yielded 6900 feet of gas per ton. Agitation throughout the Colony for roads and railways.

1864.

Grant of £106,000 passed by Parliament for roads and bridges. Proposals urged for a railway between Launceston and Deloraine rejected by Parliament. First successful shipment of English salmon ova arrived on 20th April, per *Norfolk*. This Tasmanian experiment demonstrated to the world, for the first time, that it was possible to retard incubation without destroying vitality for a period sufficiently prolonged to cover the transport of ova to the remotest part of the globe. Tasmania, therefore, has reason to be proud of this and her subsequent achievements in acclimatisation.

1865.

Torrens' Act adopted.

1866.

Opening of the new Town Hall, Hobart. The *Lincolnshire* arrived at Hobart with the second shipment of live ova of *Salmo salar*, which were successfully deposited in the hatching boxes on the River Plenty on the 5th May, 1866. Renewed agitation for the construction of railways and a progressive policy of public works.

1868.

The Duke of Edinburgh turned the first sod of the Launceston and Deloraine Railway on the 15th January.

Colonel Thomas Gore Browne's term of office expired at the end of the year 1868.

1869.

The State Aid Commutation Act received the Royal assent, 1st July, 1869. Mr. Charles Du Cane arrived in the Colony on 12th January, 1869, and on the 14th of the same month he was formally sworn in as Governor. Telegraphic communication by cable across Bass Strait successfully established on 1st May, 1869. On the 2nd August the Colony was profoundly affected by the death of the Premier, Sir Richard Dry, who was considered to be the most popular

statesman Tasmania ever possessed. He was the first native-born who was elevated to the position of Premier in the responsible Government of the Colony. In December, Sir Valentine Fleming, the Chief Justice, retired on his pension of £1000 per year, and was succeeded by Sir Francis Smith. At the same time the Hon. W. L. Dobson, Attorney-General, was elevated to the Bench. Mr. William Robert Giblin, who only entered Parliament in March, 1869, was appointed Attorney-General. He was the first native of the Colony elevated to that responsible legal office.

1870.

A census of the Colony was taken early in this year, when the returns gave a population of 99,328. Constitution Amendment Act passed, whereby the Legislative Council was increased from 15 to 16 Members, and the House of Assembly from 30 to 32. At the same time the election qualification—leasehold—was reduced from £10 to £7, and—salary—from £100 to £80. Act passed enabling the Tasmanian Main Line Railway Company to construct a line of railway, 3ft. 6in. gauge, between Hobart and Launceston.

1871.

The Launceston and Western Railway was officially opened for traffic by Governor Du Cane on 10th February, 1871.

1872.

Mr. James Smith discovered the rich deposit of tin at Mount Bischoff. This important discovery marks the beginning of a new era in the mining industry of Tasmania.

Owing to financial difficulties, the Launceston and Western Railway Company agreed, upon certain terms, to transfer the line to the Government on 3rd August, 1872.

Great dissatisfaction was felt by the landholders of the Launceston and Western Railway District by the attempt to levy a special railway rate upon that district, it being alleged that the projection of the Main Line Railway absolved them from the conditions by which they were formerly bound. Sixty-five northern magistrates appealed to the Governor requesting him to suspend legal proceedings; but the appeal was refused, whereupon twenty-six of the magistrates resigned. Eventually the landholders of the district were unconditionally relieved from the local liability.

Some trouble was also caused in connection with the Main Line Railway Company with respect to the route adopted for the line between Hobart and Launceston.

Direct telegraphic communication with England was established on 20th October.

Several attempts were made to work the extensive iron deposits in the neighbourhood of Ilfracombe. One company spent £80,000 in their operations. Many thousands of tons of pig iron were exported, but the various companies at length relinquished their efforts, as it was found that the element *chromium* rendered the cast-iron so hard and brittle that it could find no purchaser. It is hoped that science will soon

discover some method for getting rid of this difficulty, as the deposits of iron in this district are of immense extent.

1874-1875.

Mr. Charles Du Cane's term of office expired on 28th November. Chief Justice Sir Francis Smith administered the Government until the arrival of the new Governor, Mr. Frederick Aloysius Weld, who arrived in the Colony on the 11th January, 1875.

1874.

The Kennerley Ministry brought forward measures for the construction of main and branch roads, and for the purchase and completion of the Mersey and Deloraine Tramway; and, although favourably considered by the House of Assembly, the measures were rejected by the Legislative Council on two separate occasions.

1876.

The Main Line Railway, between Hobart and Evandale Junction, was opened for traffic in March, 1876, and shortly afterwards trains ran through to the terminus in Cimitiere-street, Launceston, a third rail having been laid for that purpose on the Launceston and Western Line.

Truganini, the last representative of the Tasmanian aborigines, died at Hobart on the 8th May, 1876.

1877.

Sir Robert Officer, who had filled the office of Speaker for fifteen years with much ability, resigned in consequence of advancing age. He was succeeded by Dr. Henry Butler.

This year Mr. Fysh's Cabinet succeeded in passing an important measure for the construction of important public works—roads, bridges, jetties, and telegraph lines—throughout the Colony. The sum voted for this purpose was £140,000. The Local Public Works Act was at the same time repealed, and the local liability, amounting to £31,350, was transferred to the general revenue.

The famous quartz reef now worked by the Tasmania Gold Mining Company discovered by Mr. William Dally in June, 1877.

1879.

The finances of the country, now in an unsatisfactory condition, were successfully dealt with by the Giblin Ministry. The measures proposed for placing the finances in a satisfactory condition received the approval of the country. The new taxes comprised a real and personal estate duty of 9*d.* in the pound upon the annual value of landed property; an excise duty of 3*d.* per gallon on beer; and a revision of the Customs tariff.

1880.

Governor Weld retired from the administration of the Government of the Colony on 6th May, 1880. Sir Francis Smith acted as Administrator until the arrival of Lieutenant-General Sir John H. Lefroy on 21st October, 1880. During his short term of office several important measures were passed in continuation of the policy of opening up the

country by roads and bridges. The proposal to extend the Western Line to the Mersey was, however, twice rejected by a majority in the Legislative Council, after passing the House of Assembly.

1881.

Sir John Lefroy retired from the office of Governor on the arrival of Sir George Cumine Strahan, who assumed the administration of the Colony on the 7th December, 1881. A census of the population was taken on the 3rd April, when the returns showed the number of persons to be 115,008.

1882-1889.

Valuable lodes of silver-lead, gold, and copper discovered in the western part of the Island within this period notably silver-lead at Mount Zeehan in 1885; gold and copper at Mount Lyell in 1886; and silver and lead at Heazlewood River in 1887.

Important extensions of the Government Railway system were projected within the same period. The following new branches were completed and opened for traffic, as follows:—

Year 1885—Deloraine to Formby Extension, 37 miles.
" " Parattah to Oatlands Branch, 4 miles.
" 1886—Corners to St. Mary's Branch, 47 miles.
" 1887-8—Bridgewater to Glenora Branch, 24½ miles.
" 1889—Launceston and Scottsdale Extension, 47 miles.

Besides these, the following lines have been authorised:—

Brighton to Apsley, 26 miles (nearly completed).
Sorell Railway, 15 miles.
Chudleigh Railway, 13 miles.
Ulverstone Extension, 12 miles.
Zeehan Line, 29 miles.

The total number of miles of railway—open or being constructed—in the year 1890 amounted to 470 miles, or 180 miles of railway to every 10,000 miles of territory.

In the year 1886 a new law was enacted greatly extending the franchise. The number of Members in the Legislative Council was increased from 16 to 18, and in the House of Assembly the Members were increased from 32 to 36. At the same time the boundaries of the Electoral Districts were altered for the purpose of bringing the representation of the Colony into greater harmony with the population of the respective Electoral Districts. The House of Assembly electorate is now mainly based upon the occupation or ownership of household property.

Federal Council.

At an important Conference held in Sydney on the 28th November, 1883, when representatives from all the Colonies of Australasia were present, it was agreed that joint action should at once be taken to promote the Federation of the Australasian Colonies, and a draft Bill was then prepared for the constitution of a Federal Council, defining its powers and functions, which, with minor modifications, was subsequently passed into law by the Imperial Act, known as the "Federal Council of Australasia Act, 1885." The scope of the Council's functions

are fairly indicated by the preamble of the Bill which was drawn by the Convention—

"It is expedient to constitute a Federal Council of Australasia for the purpose of dealing with such matters of common Australasian interest, in respect to which united action is desirable, as can be dealt with without unduly interfering with the management of the internal affairs of the several Colonies by their respective Legislatures."

Among the more important matters the following are specified :— The relations of Australia with the islands of the Pacific, influx of criminals, enforcement of judgments of courts of law of any Colony beyond the limits of the Colony, defences, patents, copyright, uniformity of weights and measures, &c. The Council is not empowered to deal with matters relating to customs or tariff.

At the first Session of the Council, held in Hobart in the year 1886[a], all the Colonies of Australasia were represented, with three important exceptions, viz., New South Wales, South Australia, and New Zealand. South Australia soon after was represented in the Council, but the Colonies of New South Wales and New Zealand still hold aloof. Three Sessions altogether have been held in Hobart, in the years 1886, 1888, 1889, respectively, and the more important business transacted were matters relating to Federal Judgments Bill, Civil Process Bill, Corporations Bill, Colonial Defences, Evidence Bill, New Guinea Question, New Hebrides Question, Recidiviste Question, Queensland and Western Australian Fisheries, Separation of North Queensland, Intercolonial Quarantine, Constitution of Council, Affairs in the Pacific, Pacific Cable Question.

In the year 1886 the Hon. W. R. Giblin, Premier, retired from the Ministry, and was appointed to the office of Judge of the Supreme Court, rendered vacant by the retirement of Sir Francis Smith. On the 28th October of the same year Sir G. C. Strahan retired from the governorship of the Colony in consequence of impaired health, and he died soon after in England. His Honor Judge Giblin administered the Government of the Colony until the return of Sir William Lambert Dobson, Chief Justice, from England, in November, 1886, and the latter continued to administer the Government of the Colony until the arrival of Governor Strahan's successor—Sir Robert George Crookshank Hamilton—whose distinguished career is so well known, especially his great services as Under Secretary for Ireland during the very troubled period following upon the assassination of Mr. Burke. His reception on his arrival in Hobart, on 11th March, 1887, was marked with the warmest demonstration of personal esteem throughout the whole Colony. During this interval His Honor Judge Giblin, owing to failing health, was obliged to retire from active work, and soon after, on the 17th January, 1887, he died at his home in Hobart—the place of his birth. Thus, in the prime of manhood (46 years of age), Tasmania

[a] Session called together on 26th January, 1886, by His Excellency the Governor of Tasmania—Sir George Strahan—in accordance with tha express provision of the Imperial Act.

lost one of her most distinguished statesmen. His commanding talents and public and private virtues were such as to endear him to all classes of men, and his loss is still deplored as a national calamity.

The Hon. John Stokell Dodds, Attorney-General, succeeded Mr. Giblin as Judge of the Supreme Court; and the creation of a third Judge having been found necessary, Mr. Robert Patten Adams, formerly Solicitor-General, was appointed to the office.

In the year 1886 the Hon. Adye Douglas, Premier, retired from the Government to assume the office of Agent-General in London, then established. Mr. Douglas held this office until the year 1888, when he was succeeded by the Hon. E. N. C. Braddon, formerly Minister of Lands.

The new reservoir at Hobart was opened for supply on 11th September, 1888.

Foundation stone of the new Technical School in Hobart was laid by His Excellency Sir Robert Hamilton on 10th July, 1889.

1890.

An important Convention, composed of representatives of the seven colonies of Australasia, assembled in Melbourne on the 6th February, 1890, for the purpose of determining the whole question of uniting the various Colonies under a central Federal Government. The representatives of the various Colonies thus assembled were as follows:—

New South Wales.....	The Honorable Sir Henry Parkes, Premier, New South Wales. The Honorable Wm. M'Millan, Colonial Treasurer, New South Wales.
New Zealand	The Honorable Capt. Wm. Russell Russell, Colonial Secretary, New Zealand. The Honorable Sir John Hall, K.C.M.G., Member House of Representatives, New Zealand.
Queensland	The Honorable Sir Samuel Walker Griffiths, K.C.M.G., Member Legislative Assembly, Queensland. The Honorable John Murtagh Macrossan, Colonial Secretary, Queensland.
South Australia	The Honorable John Alexander Cockburn, M.A., Premier, South Australia. The Honorable Thomas Playford, Member Legislative Assembly, South Australia.
Tasmania	The Honorable Andrew Inglis Clark, Attorney-General, Tasmania. The Honorable Bolton Stafford Bird, Treasurer, Tasmania.
Victoria.....	The Honorable Duncan Gillies, Premier, Victoria (President of Conference). The Honorable Alfred Deakin, Chief Secretary, Victoria.
Western Australia ...	The Honorable Sir Jas. George Lee-Steere, Speaker, Legislative Council, Western Australia.

Secretary to the Conference—Mr. Geo. Henry Jenkins.

The result of the deliberations of this Conference were embodied in the following resolutions agreed upon, which afterwards formed part of an address to the Queen :—

Resolutions agreed upon.

1. That, in the opinion of this Conference, the best interests and the present and future prosperity of the Australian Colonies will be promoted by an early union under the Crown ; and, while fully recognising the valuable services of the Members of the Convention of 1883 in founding the Federal Council, it declares its opinion that the seven years which have since elapsed have developed the national life of Australia in population, in wealth, in the discovery of resources, and in self-governing capacity to an extent which justifies the higher act, at all times contemplated, of the union of these Colonies, under one Legislative and Executive Government, on principles just to the several Colonies.
2. That to the union of the Australian Colonies contemplated by the foregoing resolution, the remoter Australasian Colonies shall be entitled to admission at such times and on such conditions as may be hereafter agreed upon.
3. That the Members of the Conference should take such steps as may be necessary to induce the Legislatures of their respective Colonies to appoint, during the present year, Delegates to a National Australasian Convention, empowered to consider and report upon an adequate scheme for a Federal Constitution.
4. That the Convention should consist of not more than seven Members from each of the self-governing Colonies, and not more than four Members from each of the Crown Colonies.

In accordance with these resolutions, the Parliament of Tasmania, during the Session held in the same year, appointed seven representatives as Delegates to the next National Australasian Convention, empowered to consider and report upon an adequate scheme for a Federal Constitution.

The unsatisfactory relations so long existing between the Government and the Tasmanian Main Line Railway Company terminated in October in the purchase of the line by the Government for a sum of £1,106,500, payable in 3½ per cent. inscribed stock.

The University of Tasmania was established this year. As it was deemed that the objects of higher education would be more satisfactorily promoted by a local University, the Parliament resolved to abolish the Council of Education and the Tasmanian Scholarships, and in lieu thereof to pay a yearly sum as a grant in aid to the University. The Council is composed of 18 members, nine of whom are selected by the Senate of the University, and eight by the Houses of Parliament. The Minister of Education for the time being is a member of the Council *ex officio*. The Senate mainly consists of graduates of the University and Associates of Arts of Tasmania.

CHAPTER III.

Constitution and Government.

(A.) General Government.

The Royal assent to the existing system of responsible Government in Tasmania was first proclaimed on the 24th October, 1855. The first responsible Ministry was appointed on the 1st November, 1856, and the first representative Parliament was opened on the 2nd December, 1856.

The principles of the existing system may briefly be stated to have for their object the establishment of such a constitution of Government as would secure to the Colony the full management of its own affairs, with such safeguards as might be considered necessary to prevent the local Legislature from encroaching upon the subject-matters which should belong exclusively to Imperial jurisdiction.

The provisions embodying these principles are contained in Act 18 Vict. No. 17, known as the Constitutional Act, and in the amending Acts subsequently introduced, viz., 23 Vict. No. 23 and 34 Vict. No. 42.

The form of Government consists of a Governor, appointed by Her Imperial Majesty ; an Executive Council, appointed by the Governor ; and a Legislative Council and House of Assembly, elected by the people. The "Parliament of Tasmania," properly constituted, consists of the Governor, the Legislative Council, and the House of Assembly taken together. Although not directly expressed by any one clause in the Constitution, or in the Standing Rules and Orders of both Houses approved by the Governor, all enactments binding in law must have passed both Houses of Parliament and have received Her Majesty's assent through the Governor or otherwise.

Powers of the Governor.

The powers and authorities of the Governor and Commander-in-Chief of the Colony and its dependencies are at present determined and defined by Letters Patent, dated 17th June, 1880, passed under the Great Seal of the United Kingdom, and by instructions passed on the same day under the Royal Sign Manual and Signet.

Among the more important functions and powers of the Governor may be enumerated the following, viz. :—

The lawful assent to Bills passed by both Legislative Houses ; the custody of the public seal of the Colony ; the appointment, according to law, of the Members of Executive Council, Ministers of the Colony, Judges, Commissioners, Justices of the Peace, and other necessary officers. Should he think fit, the Governor may, for the detection of crime or otherwise, grant pardons, or respite or remit the sentences of criminals convicted before any court or before any judge or magistrate ; but he may not banish criminals from the Colony, except in the case of political offenders.

The Governor is also empowered to remit any fines, penalties, or forfeitures due to the Crown.

At such times as he thinks fit, the Governor may summon or prorogue both Houses of Parliament; provided, however, that the period of twelve calendar months from the close of last session shall not have expired before a new session shall have been summoned. He may lawfully dissolve the House of Assembly at any time; but he cannot exercise this power with respect to the Legislative Council, the Members of which may hold their seats until the expiry of their full term of six years from date of election.

RIGHT OF VETO.

As regards "the right of veto," the Governor has no power so called, although he may *refuse assent* to any Bill passed by the local Legislature which in any way contains provisions affecting the following matters, viz.:—The divorce of married persons; grants of land, money, donations, or gratuities to himself; the currency; the imposition of differential duties other than as allowed by the Australian Colonies Act, 1873; the introduction of provisions which shall appear inconsistent with obligations imposed upon Her Majesty's Imperial Government by treaty; provisions which interfere with the discipline or control of Her Majesty's forces in the Colony by land or sea; provisions of an extraordinary nature and importance whereby Her Majesty's prerogative or the rights of British subjects not residing in Tasmania, or the trade and shipping of the United Kingdom and its dependencies, may be prejudiced. The Governor may further refuse assent to any Bill containing provisions in respect of which Her Majesty's assent has been once refused.

In cases of extreme urgency, however, the Governor is empowered to assent in Her Majesty's name to any such Bill, provided that its provisions shall not be repugnant to the laws of England, or inconsistent with any obligations imposed upon Her Majesty's Government by treaty. In every such case the Governor is required to transmit to Her Majesty by the earliest opportunity the Bill so assented to, together with his reasons for so doing.

LIMITATION TO THE POWER OF THE GOVERNOR.

In the execution of the powers and authorities granted to the Governor, it is determined, by the instructions already referred to, that he shall in all cases consult with the Executive Council, excepting only in cases which are of such a nature that, in his judgment, Her Majesty's service would sustain material prejudice by consulting the said Council thereupon, or where the matters to be decided upon are too unimportant to require their advice, or too urgent to admit of their advice being given by the time within which it may be necessary for him to act. In all such urgent cases, however, he is required to communicate to the said Council the measures which he may so have adopted, with the reasons thereof.

The Governor may also in extreme cases act independently or even in opposition to the advice of the Executive Council, if he shall deem it right to do so; but in any such case he is required to report the matter to Her Majesty by the first convenient opportunity, giving the grounds and reasons of his action.

In regard to the exercise of the functions of Royal clemency in respect of persons condemned to death, the Governor shall not pardon or reprieve any such offender without the advice of the Executive Council, and without first calling upon the judge who presided at the trial to report upon the case. This report must be taken into consideration by the Executive Council, before whom the particular judge referred to may be summoned to attend and to produce his notes. Notwithstanding this, the Governor must finally act according to his own deliberate judgment, whether the Members of the Executive Council concur therein or otherwise. Where the decision of the Governor is in opposition to the judgment of the majority of the Members of the Executive Council, he is required to enter on the minutes of the said Executive Council a minute of his reasons for so deciding, at full length.

The Governor may not quit the Colony for more than one month at a time without having first obtained leave from Her Majesty.

By virtue of a commission issued under Her Majesty's Sign Manual in the year 1880, it is provided, in the event of the death, incapacity, or removal of the Governor, or of his departure from the Colony, that the Chief Justice, or, in his absence, the Senior Judge for the time being, shall assume the office of Administrator of the Government.

THE LEGISLATIVE COUNCIL OR UPPER CHAMBER.

The Constitution and Powers of the Legislative Council.

The Legislative Council was originally designed as a check upon the more democratic branch of the Legislature.

The framers of its constitution, however, based it upon the elective principle, as it was considered by them that the liberties of the people would be jeopardised by vesting great power in a small and irresponsible body appointed according to the nominee system. To secure a greater measure of cautious deliberation and a more effective resistance to needless or harmful change than might be expected from the less conservative body, it was thought that it was only necessary (1) to restrict the franchise for the Upper House mainly to those who represent freehold property; (2) to broaden the area of the Electoral District; (3) to secure that the Members be elected for a longer period than the Lower House. Accordingly, the existing Legislative Council now consists of eighteen elected Members, representing fifteen defined Electoral Districts. It is presided over by one of their number elected by themselves. Every properly qualified Member may hold his seat for the period of six years, and the Council, as such, cannot be dissolved at any time. Originally, the constitutional powers and privileges of the Council were much more restricted. The number of Members was limited to fifteen, and it was imperative that a dissolution of one-third of the whole Council should take place at the end of every three years; the Members who thus retired consisting of such as held their seats continuously for the longest period. The original intention of the framers of this Act, however, was frustrated to some extent by certain of those who should naturally retire at the regular period electing to resign at a time just sufficiently distant from the end of the period to admit of their re-election. The provisions now in force prevents this

objectionable course, and has the effect of causing one-sixth of the Council to appear before their constituents every year for re-election.

The Legislative Council may, within constitutional limits, *originate* legislation in respect of any matter, with the exception of Bills for the appropriation of any part of the revenue, or Bills for imposing any tax, rate, duty, or impost. Although the Constitution Act limits the privileges of the Legislative Council as regards the *origination* of all Bills for appropriating any part of the revenue, or for imposing any tax, rate, duty, or impost, it is empowered by Clause xxix. of the Constitution Act to make Standing Orders for regulating business and for determining the manner in which Bills shall be introduced, passed, numbered, and intituled, and for the proper presentation of the same to the Governor for Her Majesty's assent, and generally for the conduct of all business and proceedings of the said Council. Thus, apart from the limitation in respect of the *origination* of Money Bills, the significance of which in itself is a source of confusion,* the Constitution Act leaves to either branch of Legislature the difficult task of determining the form and extent of their own relative legislative powers and privileges.

The Legislative Council, by virtue of its adopted Standing Rules, has formed its system of procedure more in accordance with the powers and privileges of the House of Commons than with the House of Lords, and, consequently, as regards the modification of the details of all Bills introduced, it claims to be co-ordinate in legislative power with the House of Assembly.

THE CONSTITUTION AND POWERS OF THE HOUSE OF ASSEMBLY.

The constitution of the House of Assembly, based mainly on the principle of household suffrage and limited wages qualification, consists of 36 members, representing 28 distinct electoral districts. Every Assembly shall continue for five years from the day of the return of the writs for choosing the same, subject, nevertheless, to be sooner dissolved by the Governor.

It is thus more widely and directly representative than the Legislative Council, whose base of suffrage is mainly upon freehold property ownership. It is especially the *responsible* Representative Chamber, inasmuch as a general appeal to the country, the result of an adverse vote to the Ministry of the day, may bring each Member before his constituents at any time. Naturally, therefore, as described by one of the principal framers of its constitution (Sir R. Dry), it reflects rapidly and instinctively the current life and aspiration of the whole people, and, as a consequence, the initiation of nearly all movement, progress, and innovation takes place within its walls.

In the House of Assembly originate all Bills for appropriating any part of the revenue, or for imposing any tax, rate, duty, or impost; always provided that all votes or Bills in respect of such money matters shall in the first place be recommended by the Governor (*i.e.*, the responsible Ministry of the day) during the Session in which such vote, resolution, or Bill shall be passed.

Although the legislative powers of the House of Assembly are

* See Todd's. Parliamentary Government in the Colonies, pp. 447, 500. See also "Constitutional Functions of a Legislative Council." Paper 112, House of Assembly, Tas., 1881.

in practice little more than co-ordinate with those of the Legislative Council, its responsibilities are immeasurably greater. For while each individual Member of the Legislative Council need only come before his constituents individually, yet the Council, in itself, may now be said to be permanently established, and quite independent of the Executive or of any constituency.

The House of Assembly, on the contrary, both individually and collectively, must certainly be brought before the electors once in every five years, while it is also individually and collectively liable to dissolution at any time. For these reasons, it is tacitly assented in practice to be fit and proper that all important monetary measures should originate in the more directly responsible House of Assembly; while the exercise of those necessary functions, which might be impaired by timidity or by unduly casting side-glances at consequences personal to individual Members, is more fitly carried on in the more protected sphere of the Legislative Council.

SETTLEMENT OF DIFFERENCES ARISING BETWEEN THE TWO REPRESENTATIVE HOUSES.

There is no constitutional provision for the final settlement of serious differences, should they arise, between the two Representative Houses. That no serious or prolonged deadlock in politics has resulted hitherto from this want is, in a large measure, due to the circumstance that a spirit of conciliation and compromise has always pervaded the leading statesmen of both Houses.

It may seem extraordinary that the two Houses, almost co-ordinate in power, but differently constituted as regards representation and responsibility, should not have more seriously paralysed each other's operations hitherto; but a reference to the qualifications of their respective electors show that, in a large measure, the same individuals and the same interests are common to them both, and in this way a common pressure is brought to bear upon individual Members of the Legislative Council when the general feeling is strong in favour of certain schemes brought under their consideration. Indirectly, therefore, the element of a common representation conduces to lessen the friction caused by the differences or independent action of the respective Houses in dealing with matters of legislation. Possibly another reason why "deadlocks" of an inconvenient nature have been avoided hitherto may be due to the very circumstance that the powers assumed by the Legislative Council in amending or eliminating any item of a Money or other Bill, *without rejecting it as a whole*, prevent the abuse of tacks to Bills of Supply, which have occasionally caused so much trouble elsewhere.

It must be clearly understood, moreover, that although the Legislative Council claims to have powers co-ordinate with the House of Assembly in altering or amending Money Bills when presented, and although the latter branch have in practice tacitly assented to the claims of the Upper House, under ordinary circumstances it must be confessed that there is a division of opinion between the Members of both Houses generally as regards the strict legality of the claims and practice of the Upper Chamber in respect of Bills dealing with money matters.

Judging from frequently expressed opinion, and from the practice and relations which have hitherto prevailed, it would seem that the

more democratic Chamber tolerates or accepts, under protest, what is deemed by them an encroachment upon their rightful and exclusive privileges, where the modifications introduced by the Upper Chamber are small or unimportant; but on several occasions, when the matters so dealt with were of more than ordinary importance, somewhat rancorous feelings have been aroused.

Therefore, it may be urged by some that, so long as a legitimate mode of terminating any seriously prolonged difference of opinion between both Houses is lacking, the constitution is theoretically imperfect, and serious difficulty may yet arise.

To many minds it may seem to be too hazardous to rely entirely upon the chance existence of that spirit of conciliation and compromise which has fortunately prevented serious difficulties hitherto.

QUALIFICATION OF MEMBERS.

No person is capable of being elected a Member of either branch of the Legislature who is not a natural-born or naturalized subject of Her Majesty, or who has not received letters of denization or a certificate of naturalization. In addition, no person is capable of being elected who is under the age of 30 years for the Legislative Council, and under 21 years for the House of Assembly.

The following list of disqualifications also applies to both Houses as regards the election of persons or the right of membership, viz.:—

(1.) All Members who shall accept any office of profit or any pension from the Government, Ministerial offices excepted.

(2.) Provided the contract be not one generally entered into by any incorporated or trading company of more than six persons, all contractors* with the Government, directly or indirectly, for or on account of the public service.

(3.) Failing to give attendance in Parliament for one entire session, without formal permission.

(4.) Declaring allegiance or subjection to any foreign Prince.

(5.) Holding the office of Judge of the Supreme Court.

(6.) Members who shall become bankrupt or shall take the benefit of any law relating to insolvent debtors, or become public defaulters, or be attainted of treason, or be convicted of felony or any infamous crime, or shall become of unsound mind.

QUALIFICATION OF ELECTORS.

(1.) *For the Legislative Council.*

The following persons are entitled to vote at the election of a Member to serve in the Legislative Council, viz.:—

Every man of the age of 21 years, being a natural-born or naturalized subject of Her Majesty, and every man of the like age who has received letters of denization or a certificate of naturalization—

(*a*) Having a freehold estate in possession,† legal or equitable, of the clear annual value of twenty pounds sterling money.

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* Does not apply to purchase, sale, or lease of lands or hereditaments.

† Located or residing, as the case may be, in the district for which the vote is to be given.

(*b*) Having a leasehold estate in possession* of the annual value of eighty pounds.
(*c*) Being a graduate of any university in the British dominions, or an Associate of Arts in Tasmania.*
(*d*) Being a barrister or Solicitor on the roll of the Supreme Court of Tasmania.*
(*e*) Being a legally qualified medical practitioner.*
(*f*) Being an officiating minister of religion.*
(*g*) Being an officer or retired officer of Her Majesty's Land or Sea Forces not being on actual service.*

(2.) *For the House of Assembly.*

The following persons are entitled to vote at the election of a Member to serve in the House of Assembly only:—

Every man of the age of 21 years, being a natural-born or naturalized subject of Her Majesty, and every man of the like age who has received letters of denization or a certificate of naturalization—

(*a*) If his name is included in the Assessment Roll as the owner or occupier of any property.*
(*b*) If he is in receipt of income, salary, or wages at the rate of sixty pounds sterling a year, and has received income, salary, or wages equal to thirty pounds sterling during the period of six months next before the first day of November in any year.* A house allowance or rations to be regarded as wages. House allowance, legal value, £10 per year; rations, £20 per year; both, £30 per year.

NUMBER OF ELECTORS, ETC.

The limits of the franchise for both Houses of Parliament, as shown in the foregoing abstracts of the "Qualification of Electors," was greatly extended by special enactment in the year 1884. The present franchise for the House of Assembly practically embraces all males of mature age who are not either paupers or criminals. The mode of election is by ballot. The following table shows the effect of the old system of franchise as contrasted with the extended franchise now in operation:—

MEAN POPULATION, 1884, 128,380; 1889, 148,815; ESTIMATED NUMBER OF MALES, 21 YEARS AND OVER, 1884, 34,930; 1889, 40,536.

Particulars.	1884.		1889.	
	Upper House.	Lower House.	Upper House.	Lower House.
Districts	13	32	15	28
Members	16	32	18	36
Electors	3350	16,897	6420	26,054
Ditto per Member	209	528	357	724
Ditto per cent. to total mean Population..	2·57	12·94	4·31	17·51
Ditto per cent. to Males 21 years and over	9·59	48·37	15·29	62·07
Percentage of Electors who exercised privilege at or since last General Election (contested seats)	69·06	61·12	63·73	79·67

* Located or residing, as the case may be, in the district for which the vote is to be given.

HOUSE OF ASSEMBLY.

The following table gives more extended information with respect to the constitution of the House of Assembly before and after the passing of the "Constitution Amendment Act, 1885" :—

HOUSE OF ASSEMBLY—MEMBERS AND VOTERS.

	1882.			1886.			1889.	
	Members.	Voters.	Votes polled.	Members.	Voters.	Votes polled.	Voters.	Population.
Brighton	1	339	...	1	590	434	553	4331
Campbell Town	1	309	142	1	363	225	398	3596
Clarence[a]	1	187	...	...	...	...	...	...
Cressy[b]	...	...	...	1	271	...	271	3532
Cumberland	1	347	199	1	541	...	613	4153
Deloraine	1	527	...	1	791	486	845	5055
Devon, East	1	716	...	2	1290	1521	1649	7222
„ West	1	583	...	1	1013	693	1271	5072
Evandale[c]	...	...	...	1	500	...	443	4182
Fingal	1	533	...	1	524	...	761	4073
Franklin	1	371	294	1	714	...	788	4468
George Town	1	342	...	1	782	...	776	5231
Glenorchy	1	421	...	1	1082	...	1004	4909
Glamorgan	1	114	...	1	311	220	301	2637
Hobart,[d] North				2	1703	1358	1535	
„ South				2	1345	1010	1198	
„ West				2	1722	1324	1563	
„ Total	5	3854	2147	6	4770	3692	4296	27,648
Kingborough	1	636	387	2	1537	1747	1636	8476
Launceston,[e] North				2	1413	1632	1473	
„ South				2	1695	1437	1866	
„ Total	3	2480	...	4	3108	3069	4975	16,697
Longford[f]	...	...	...	1	502	...	489	4146
Morven[g]	1	271	...	...	...	...	...	...
New Norfolk	1	299	...	1	594	486	557	4769
Norfolk Plains[h]	1	367	248	...	...	...	...	...
Oatlands	1	450	...	1	538	...	475	3956
Queenborough[i]	1	358	...	...	...	...	...	...
Richmond	1	251	196	1	428	349	449	3769
Ringarooma[j]	...	...	...	1	1022	664	888	4262
Ringwood[k]	1	168	95	...	...	...	...	...
Selby	1	759	...	1	822	...	1166	4188
Sorell	1	529	276	1	681	...	769	3742
Wellington	1	707	...	2	1550	1013	1462	6235
Westbury	1	601	...	1	742	...	855	5131
	32	16,419	...	36	25,066	14,599	26,054	151,480

The Constitution Amendment Act of 1885 abolished the old districts [a g h i] and [k], and modified those of [d] and [e]. The new districts established are marked [b c f] and [j]. All the boundaries of older districts were considerably modified, so that strict comparison cannot be made. The number of Members was increased by 4, and the franchise was greatly extended.

LEGISLATIVE COUNCIL.

The following abstract for the years 1883 and 1889 shows the difference of the constitution of the Council and the number of voters caused by the passing of the "Constitution Amendment Act, 1885":—

LEGISLATIVE COUNCIL—MEMBERS AND VOTERS.

	1883.		1889.		Last contested Election.	
	Members.	Voters.	Members.	Voters.	Polled at Election.	Date.
	No.	No.	No.	No.	No.	
Buckingham	1	251	1	587	168	1884
Cambridge	1	128	1	296	...	...
Derwent	1	195	1	254	163	1889
Hobart	3	658	3	1150	613	1885
Huon	1	144	1	257	114	1882
Jordan[a]	1	233	...	...	...	...
Launceston[b]	...	...	2	962	422	1886
Longford[c]	1	150	...	...	...	...
Macquarie[d]	...	...	1	276	...	...
Meander	1	214	1	401	136	1881
Mersey	1	316	1	619	...	...
North Esk	1	215	1	270	179	1886
Pembroke	1	201	1	277	92	1881
Russell[e]	...	...	1	238	...	...
South Esk	1	207	1	306	...	...
Tamar	2	546	1	319	159	1889
Westmorland[f]	...	...	1	208	...	...
	16	3458	18	6420	2046	

[a c]—These districts were abolished by Constitution Amendment Act, 1885. [b d e f]—Fresh districts created, ditto. The boundaries of all districts were also modified and the franchise extended: strict comparisons in respect of districts cannot therefore be made.

(B.) LOCAL GOVERNMENT.

MUNICIPALITIES AND POLICE DISTRICTS.

For purposes of Local Government,* the Colony of Tasmania is divided into 34 distinct districts, 21 of which are municipalities, and 13 are police districts. The latter, however, are still directly under the control of officers appointed by the Central Government.

The following table gives fuller particulars regarding the area, population, and relative extent of the several divisions:—

* Cross and by-roads, ports and lighthouses, rabbit destruction, hospitals, &c. are also more or less under control of local bodies. There is also a law passed in 1884 granting powers to rural "Town Boards" within Police Districts somewhat similar to those enjoyed by existing municipalities.

MUNICIPAL AND POLICE DISTRICTS.

	Municipalities.		Police Districts	Total.
	Urban.	Rural.		
Districts ..... No.	2	19	13	34
Area ..... square miles	7·36	11,799	14,409	26,215·36
Per cent. to total	9·03	45·01	54·96	100
Population, 1881 ..... No.	33,387	43,127	38,494	115,008
Per cent. to total	29·03	37·50	33·47	100
Valuation of property, 1889.....	£295,503	£387,342	£240,812	£923,657
Ditto per cent. to total	31·99	41·94	26·07	100

URBAN MUNICIPALITIES.

Each of the urban municipalities are governed by a council composed of nine elected aldermen, one of whom is chosen as mayor by the said aldermen on the last Friday in December in each year. Three aldermen who have been longest in office without re-election retire, but are eligible for re-election. The election of three aldermen to supply the vacancies takes place in each year on the preceding day. The mode of election is by ballot.

Persons entitled to vote at Elections of Aldermen of Urban Municipalities.

Every male of the full age of 21 years named in the assessment roll for the time being in force as the occupier of any land or building, or any portion of any building, of the annual value of eight pounds or upwards, is deemed to be a citizen, and all such who have paid all municipal rates payable up to the day of election shall be entitled to vote at the election of aldermen according to the following scale, viz. :—

	Number of Votes.
£8 and under £40	1
£40 „ £80	2
£80 „ £120	3
£120 „ £160	4
£160 „ £200	5
£200 „ £240	6
£240 and upwards	7

Qualifications of Mayor and Aldermen.

Every citizen who is entitled to vote at the election of aldermen, and is seised of real estate, or possessed of some chattel interest therein, to the amount of five hundred pounds, or assessed under an existing assessment for the city in respect of property of the annual value of not less than one hundred pounds, shall be qualified to be elected an alderman.

The following persons are expressly disqualified, viz. :—Judges, chairmen of courts of justice, clergymen, any person holding any office of profit under the Crown, or in the gift or disposal of the municipal

council other than that of mayor, officers of the army or navy on full pay, persons interested directly or indirectly in any contract connected with the corporation, with the exception of joint stock companies, shareholders or proprietors,* declared insolvents, aldermen who are absent from city for more than three months except in case of illness.

RURAL MUNICIPALITIES.

Form of Government.

The government of each rural municipality is somewhat similar to that described in respect of urban municipalities, with the exception that the members elected are termed councillors. The number elected of such is limited to seven, one of which is chosen by the council, for a yearly period only, as principal, under the title of warden. Two councillors who have been longest in office without re-election shall retire, save that in every third year the three who have been longest in office without re-election shall retire. Those who thus retire are eligible for re-election.

Persons entitled to vote at Elections of Councillors in Rural Municipalities.

The following persons are qualified to vote at elections of councillors :—

Every male or female of the age of 21 years and over whose name is on the assessment roll, and who has paid all municipal rates due before four o'clock of the day prior to day of election—

(*a*) Holding property within the municipality.

(*b*) Being an occupier of property within the municipality.

The following is the scale according to which the various classes of electors may vote, viz. :—

Annual Value of Property.	Number of Votes.
Under £30	1
£30 „ £80	2
£80 „ £160	3
£160 „ £240	4
£240 „ £360	5
£360 „ £460	6
£460 and over	7

Qualification of Councillors for Rural Municipalities.

The following persons are qualified to be elected as councillors of any rural municipality, viz :—All properly qualified electors, provided that they are not judges, clergymen, persons holding any office or place of profit in the disposal of the municipal council other than warden, being a councillor of more than one municipality; persons directly or

* All such are liable to a penalty of not less than fifty and not exceeding one hundred pounds, and shall be further liable to be disqualified for seven years after conviction of any such offence from holding any office in or under the corporation.

† Any one person can only vote in respect of one qualification within the same district.

indirectly interested in any contract* with the municipality, shareholders or proprietors of joint stock companies as such excepted; all such are disqualified from being elected as councillors.

POWERS AND FUNCTIONS OF MUNICIPAL COUNCILS.

Subject to the approval of Parliament, each municipal council may make and amend by-laws for the purpose of regulating all matters properly pertaining to Local Government within the limits of its own municipality, to enable municipalities to carry on their functions effectively. They are empowered, within definite limits, by Parliament, to assess property, levy rates and fees, borrow money, make contracts, and otherwise provide for necessary revenue and expenditure. Rural municipal accounts are yearly audited by the Auditor-General. Urban municipal accounts are still audited by officers appointed by the electors of the particular district; but the system of appointing local auditors is open to many objections, and, consequently, there are frequent appeals made in the local newspapers to have all municipal accounts placed yearly under the examination of the Auditor-General, whose system of check upon the rural municipal accounts is most effectual, and meets with general approval.

During the year 1889 the rates in rural municipalities ranged from 6*d.* to 1*s.* 4*d.* in the £1; in urban, exclusive of gas and water, the maximum rate was 2*s.* 5*d.* in the £1. The taxation in municipalities altogether, during 1889, represents 16·30 per cent. of total taxation, general and local, which amounts to 67·86*s.* per head of mean population for the year. The police force within each municipality is under the immediate control of the warden or mayor. The Central Government merely exercises supervision, and grants supplementary aid, if necessary, to keep the local force up to a given standard of strength and efficiency.

The police force in police districts, known as the "Territorial Police," is immediately under the control of the Central Government.

Fugitive Offenders.

With respect to fugitive offenders, the Act of the Tasmanian Parliament (41 Victoria, No. 29), "The Extradition Act, 1877," provides that all powers vested in and acts authorised or required to be done by a police magistrate, or any justice of the peace, in relation to the surrender of fugitive criminals in the United Kingdom, under "The Extradition Acts, 1870 and 1873," (England), should be vested in, and might be exercised and done by, the police magistrates at Hobart and Launceston respectively, in relation to the surrender of criminals under the said Acts. This Act came into force on the second day of July, 1878.

With the object of facilitating the apprehension of offenders escaping to the Colony of Tasmania from the other Australian colonies, the "Fugitive Offenders Act, 1881," (England), is applicable to Tasmania in common with the rest of the Australian colonies.

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* All such, as councillors, are further liable to a penalty not exceeding fifty pounds for any such offence, and are disqualified for seven years after conviction from holding any office in or under such municipality.

Extent of the Application of the Laws of England to Tasmania.

With reference to this subject, the Act of the Imperial Parliament (9 George IV., chapter 83), known as "The Huskisson Act," provides that all laws and statutes in force within the realm of England at the time of the passing of that Act be applied in the administration of justice in the courts of the Colony of Tasmania, so far as the same could be applied within the said Colony; and as often as any doubt should arise as to the application of any such laws or statutes, that it should be lawful for the Legislature to declare whether such laws or statutes should be deemed to extend to the colonies, and to be in force within the same, or to make and establish such limitations and modifications of any such laws and statutes within the Colony as might be deemed expedient.

Scope and Machinery of Government.

Scope of General Government.

In Tasmania, as well as in other self-governing Colonies, the scope of general government—owing to the peculiar condition of lands thinly populated, with vast undeveloped areas—embraces many functions which it would be impossible to resign to private enterprise as in older countries. Roads, Railways, Bridges, and Harbours must be provided *in advance of the settler*, and hence such service must in their initial stages be promoted by the central government; for at this stage the development of the lands open for selection could not be profitably advanced by private or local enterprise.

Hence it has been found necessary to embrace such public works as among the most important functions of the *general government* of the Colony. Unless this fundamental distinction of the scope of the general government in old and new countries be thoroughly considered and allowed for, all comparisons relating to the proportion and cost of services and public debt between countries so differently conditioned would be worse than useless. In young countries the greater proportion of the cost of general government is connected with service of distribution or communication—such as Railways, Roads, Bridges, Harbours, Post, and Telegraphs—and these depend upon area, and not population. In old countries the greater part of these services is and can be more advantageously left to *private enterprise* or to *local government*.

No comparison of the cost of *general government* in old and young countries could, therefore, be instituted that would not lead to the most absurd conclusions if these differing conditions respecting functions of government be not first carefully reckoned with.

This is best appreciated by contrasting the proportion of expenditure incurred in special Public Works and special Services (Railways, &c.) in Tasmania and the United Kingdom.

PROPORTION of Expenditure of General Government in connection with Railways, Roads, Post and Telegraphs, and other special Public Services in the United Kingdom and Tasmania.

PER-CENTAGE OF COST.

	Tasmania.	*United Kingdom.*
General Government	36·57	90·57
Railways,* Roads, Post and Telegraph, and other Public Services	63·43	9·43
	100·00	100·00

PER HEAD OF POPULATION.

	shillings.	*shillings.*
General Government	33·41	42·01
Railways,* Roads, Post and Telegraph, and other Public Services	58·20	4·37
	91·61	46·38

Thus, in the United Kingdom, Railways, Roads, and other Public Services do not form a charge upon general government, as they are mostly undertaken either by private enterprise or by local government; and the portion of them left to the central government only amounts to 9·43 per cent. of the total expenditure of the general government, or 4·37*s.* per head of the population; whereas in Tasmania such services are mostly borne by the general government, and form as much as 63·43 per cent of its total expenditure, or 58·20*s.* per head of the population. The cost of ordinary Civil Service departments in the respective countries shows that the greater population involves the greater relative expenditure; Tasmania being 33·41*s.* per head, and the United Kingdom being 42·01*s.* per head.

This analysis clearly shows that unqualified comparisons between countries so differently conditioned usually result in confusion or self-deception.

Civil Service of Tasmania.

In the year 1889 the salaries and wages of the Civil Service proper, including wages of workmen employed on Railways and other daily or weekly-wage servants, amounted to £219,838, or about 32·24 per cent. of the total expenditure. The whole of the officers earning *salaries* and *wages* (including the Governor, Ministers, and Judges) number 2308 persons, with an average of £95·25 per head. Of these, 1541, or 66·77 per cent., have salaries under £100 per year, averaging £42·61 per head, largely made up of persons serving in the smaller offices of the Post and Telegraph Departments in country districts. Salaries under £200, together with wages of workmen on railways, messengers, &c. absorb £154,867, or about 70·45 per cent. of all wages and salaries.

* All railways in England are in private hands.

Of the 2308 officers referred to, the following table gives fuller particulars regarding the proportions under various salary groups :—

PROPORTION of Salaries and Wages under various groups, year 1890.

Salary.	Officers.	Salaries.	Per cent. Officers.	Per cent. Salaries.	Mean rate of Salary.
£ £	No.	£			£
1 and under 100	1541	75,672	66·77	34·42	42·61
100 „ 200	602	79,195	26·08	36·03	131·55
200 „ 300	74	16,516	3·20	7·51	223·18
300 „ 400	32	10,475	1·39	4·76	327·34
400 „ 500	29	12,280	1·26	5·59	426·20
500 „ 600	12	6200	0·52	2·82	516·66
600 „ 700	7	4250	0·30	1·93	607·28
700 and over*	11	15,250	0·48	6·94	1386·36
	2308	219,838	100·00	100·00	95·25

* Includes 4 at £900, 2 at £1200, 1 at £1250, 1 at £1500, 1 at £5000.

FORM OF GOVERNMENT IN AUSTRALASIAN COLONIES COMPARED.

The following information respecting the forms of Representative Government in the several Colonies of Australasia for year 1889 may be of additional interest :—

Representative Government in the various Colonies of Australasia compared.

Legislative Council (Upper Chamber.)

Colony.	Area—No. of Square Miles.	No. of Members.	No. of Districts.	No. of Electors.	Constituencies. 1 Member.	2 Members.	3 Members.	4 Members.	5 Members.	6 Members and over.	Area—Square Mile Per Member.	Area—Square Mile Per District.	Population Per Member.	Population Per District.	Duration of Term in Years.
Victoria	87,884	48	14	151,816	...	...	8	6	...	...	1848	6277	23,006	78,878	6
N. S. Wales	310,700	71	1	...	...	...	...	...	...	1	4376	310,700	15,549	1,103,970	Nom. life
Queensland	668,497	39	1	...	...	...	...	...	...	1	17,141	668,497	10,181	397,061	Ditto
S. Australia	903,690	24	4	33,741	...	...	...	...	...	4	37,654	225,923	13,142	78,850	3
W. Australia	1,060,000	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Tasmania	26,215	18	15	6420	13	1	1	...	...	...	1456	1748	8267	9921	6
New Zealand	104,032	...	...	...	...	...	...	...	...	...	2548	104,471	14,971	613,830	Nom. life
All	3,161,018														

Legislative Assembly (Lower Chamber.)

	Population.														
Victoria	1,118,028	95	84	253,589	73	11	...	...	...	...	925	1046	11,624	13,146	3
N. S. Wales	1,122,200	137	74	288,600	37	19	10	8	...	...	2268	4198	8058	14,918	3
Queensland	406,658	72	60	73,957	48	12	...	...	...	...	9284	11,141	5514	6617	5
S. Australia	319,166	54	27	70,963	...	27	...	...	...	...	16,731	33,462	5854	11,708	3
W. Australia	43,698	26	14	5763	11	3	...	...	...	1†	40,769	75,714	1633	3075	5
Tasmania	151,480	36	28	26,054	20	8	...	...	...	...	728	936	4133	5315	5
New Zealand	620,279	95	95	175,410	95	...	...	...	...	...	1099	1099	6461	6461	3
All	3,781,509	515	382	894,336	284	80	10	8	...	1	6139	8276	7216	8755	

* Western Australia has no Upper Chamber.

† 9 Members, nominee, representing the whole Colony.

GOVERNORS.

RETURN showing the Names of the Governors and Acting-Governors of the Colony of Tasmania, and the Dates of their Assumption of, and Retirement from, Office.

Name.	Office.	Date of Assumption of Office.	Date of Retirement from Office.
Colonel David Collins	Lieutenant-Governor of the Colony of Van Diemen's Land	19 Feb. 1804	24 Mar. 1810
Lieutenant Edward Lord Capt. Murray, 73rd Regt.	Commandants	24 Mar. 1810	Feb. 1812
Lieutenant-Colonel Geiles, 73rd Regt.	Commandant	Feb. 1812	4 Feb. 1813
Colonel Davey	Lieutenant-Governor	4 Feb. 1813	9 April, 1817
Colonel Sorell	Ditto	9 April, 1817	14 May, 1824
Colonel Arthur	Ditto	14 May, 1824	3 Dec. 1825
Lieutenant-General Sir R. Darling	Governor-in-Chief	3 Dec. 1825	6 Dec. 1825
Colonel Arthur	Lieutenant-Governor	6 Dec. 1825	30 Oct. 1836
Lieutenant-Colonel Snodgrass	Acting Lieutenant-Governor	31 Oct. 1836	5 Jan. 1837
Sir John Franklin, K.C.H.	Lieutenant-Governor	6 Jan. 1837	21 Aug. 1843
Sir J. E. Eardley-Wilmot, Bart.	Ditto	21 Aug. 1843	13 Oct. 1846
C. J. Latrobe, Esq.	Administrator of the Government	13 Oct. 1846	25 Jan. 1847
Sir W. T. Denison, Kt.	Lieutenant-Governor	26 Jan. 1847	8 Jan. 1855
Sir H. E. F. Young, Kt. C.B.	Governor-in-Chief	8 Jan. 1855	10 Dec. 1861
Colonel T. Gore Browne, C.B.	Administrator of the Government	11 Dec. 1861	16 June, 1862
	Governor-in-Chief	16 June, 1862	30 Dec. 1868
Lieutenant-Colonel W. C. Trevor, C.B.	Administrator of the Government	30 Dec. 1868	15 Jan. 1869
C. Du Cane, Esq.	Governor and Commander-in-Chief	15 Jan. 1869	28 Nov. 1874
Sir Valentine Fleming, Kt.	Administrator of the Government	26 Mar. 1874	June, 1874
Sir Francis Smith, Kt.	Ditto	30 Nov. 1874	13 Jan. 1875
F. A. Weld, Esq., C.M.G.	Governor and Commander-in-Chief	13 Jan. 1875	5 April, 1880
Sir Francis Smith, Kt.	Administrator of the Government	6 April, 1880	21 Oct. 1880
Sir J. H. Lefroy, K.C.M.G., C.B.	Ditto	21 Oct. 1880	6 Dec. 1881
Major Sir George Cumine Strahan, R.A., K.C.M.G.	Governor and Commander-in-Chief	7 Dec. 1881	28 Oct. 1886
Acting Chief Justice the Hon. W. L. Dobson	Administrator of the Government	21 April, 1884	19 May, 1884
Acting Chief Justice the Hon. W. R. Giblin	Ditto	29 Oct. 1886	18 Nov. 1886
Chief Justice Sir W. L. Dobson, Knight	Ditto	18 Nov. 1886	11 Mar. 1887
Sir R. G. C. Hamilton, K.C.B.	Governor and Commander-in-Chief	11 Mar. 1887	Still in office

MINISTRIES.

NAMES of the Members of the successive Ministries which have held Office in Tasmania since the inauguration of Responsible Government, together with the Dates of their Appointment and Retirement.

No.	Name of Minister.	Office.	Date of Appointment or of joining the Ministry.	Date of Retirement.
1	William Thomas Napier Champ	Colonial Secretary and Premier	1 Nov. 1856	26 Feb. 1857
	Thomas Daniel Chapman	Colonial Treasurer		
	Francis Smith	Attorney-General		
	John Warrington Rogers	Solicitor-General	15 Dec. 1856	26 Feb. 1857
	Henry Frampton Anstey	Secretary of Lands and Works	1 Nov. 1856	26 Feb. 1857
	William Edward Nairn	Seat in Ex. Council without office		
2	Thomas George Gregson	Colonial Secretary and Premier	26 Feb. 1857	25 April, 1857
	Charles Meredith	Colonial Treasurer		
	John Compton Gregson	Attorney-General		
	James Whyte	Seat in Ex. Council without office		
	Maxwell Miller	Ditto		
	John Helder Wedge	Ditto		
3	William Pritchard Weston	Premier without office	25 April, 1857	12 May, 1857
	William Henty	Colonial Secretary		
	Frederick Maitland Innes	Colonial Treasurer		
	Francis Smith	Attorney-General		
	Thomas John Knight	Solicitor-General		
	Robert Quayle Kermode	Seat in Ex. Council without office		
4	Francis Smith	Attorney-General and Premier	12 May, 1857	1 Nov. 1860
	William Henty	Colonial Secretary		
	Frederick Maitland Innes	Colonial Treasurer		
	Thomas John Knight	Solicitor-General		
	Robert Quayle Kermode	Seat in Ex. Council without office		
	Wm. Pritchard Weston	Ditto		
	John Walker	Ditto		
5	Wm. Pritchard Weston	Premier without office	1 Nov. 1860	22 July, 1861
	William Henty	Colonial Secretary	1 Nov. 1860	2 Aug. 1861
	Frederick Maitland Innes	Colonial Treasurer		
	Thomas John Knight	Attorney-General	2 Nov. 1860	4 Feb. 1861
	succeeded by			
	William Lambert Dobson	Ditto	5 Feb. 1861	2 Aug. 1861
	William Archer	Seat in Ex. Council without office	2 Nov. 1860	

No.	Name of Minister.	Office.	Date of Appointment or of joining the Ministry.	Date of Retirement.
6	Thomas Daniel Chapman	Premier without office	2 Aug. 1861	1 Nov. 1862
	William Henty	Colonial Secretary		
	succeeded by			
	Frederick Maitland Innes	Ditto	1 Nov. 1862	20 Jan. 1863
	Frederick Maitland Innes	Colonial Treasurer	2 Aug. 1861	1 Nov. 1862
	succeeded by			
	Thomas Daniel Chapman	Ditto & Premier	1 Nov. 1862	20 Jan. 1863
	William Lambert Dobson	Attorney-General	2 Aug. 1861	
7	James Whyte	Colonial Secretary and Premier	20 Jan. 1863	24 Nov. 1866
	Charles Meredith	Colonial Treasurer		
	Robert Byron Miller	Attorney-General		
	James Milne Wilson	Seat in Ex. Council without office		
8	Sir Richard Dry	Colonial Secretary and Premier	24 Nov. 1866	1 Aug. 1869
	Thomas Daniel Chapman	Colonial Treasurer	24 Nov. 1866	4 Aug. 1869
	William Lambert Dobson	Attorney-General		
9	James Milne Wilson	Colonial Secretary and Premier	4 Aug. 1869	4 Nov. 1872
	Thomas Daniel Chapman	Colonial Treasurer		
	William Lambert Dobson	Attorney-General	4 Aug. 1869	5 Feb. 1870
	succeeded by			
	William Robert Giblin	Ditto	5 Feb. 1870	4 Nov. 1872
	Henry Butler	Seat in Ex. Council without office	5 Aug. 1869	26 Oct. 1869
	Henry Butler	Minister of Lands and Works	27 Oct. 1869	4 Nov. 1872
	James Alfred Dunn	Seat in Ex. Council without office	5 Aug. 1869	
10	Frederick Maitland Innes	Colonial Treasurer and Premier	4 Nov. 1872	4 Aug. 1873
	James Reid Scott	Colonial Secretary		
	John Alexander Jackson	Attorney-General		
	Charles Meredith	Minister of Lands and Works		
11	Alfred Kennerley	Premier without office	4 Aug. 1873	20 July, 1876
	Thomas Daniel Chapman	Colonial Secretary	4 Aug. 1873	1 April, 1876
	succeeded by			
	George Gilmore	Ditto	10 April, 1876	20 July, 1876
	Philip Oakley Fysh	Colonial Treasurer	4 Aug. 1873	13 Mar. 1875
	succeeded by			
	Frederick Maitland Innes	Ditto	13 Mar. 1875	20 July, 1876
	William Robert Giblin	Attorney-General	4 Aug. 1873	
	William Moore	Minister of Lands and Works	4 Aug. 1873	

No.	Name of Minister.	Office.	Date of Appointment or of joining the Ministry.	Date of Retirement.
12	Thomas Reibey	Colonial Secretary and Premier	20 July, 1876	9 Aug. 1877
	Charles Meredith	Colonial Treasurer	20 July, 1876	9 Aug. 1877
		Minister of Lands and Works	21 July, 1876	21 Aug. 1876
	Charles Hamilton Bromby	Attorney-General	20 July, 1876	9 Aug. 1877
	Christopher O'Reilly	Minister of Lands and Works	21 Aug. 1876	
	William Lodewyk Crowther	Seat in Ex. Council without office	20 July, 1876	
13	Philip Oakley Fysh*	Premier without office	9 Aug. 1877	5 Mar. 1878
	William Robert Giblin	Attorney-General	9 Aug. 1877	13 Aug. 1877
		Colonial Treasurer	13 Aug. 1877	20 Dec. 1878
	William Moore	Minister of Lands and Works	9 Aug. 1877	13 Aug. 1877
		Colonial Secretary	13 Aug. 1877	20 Dec. 1878
	Alfred Dobson	Attorney-General	13 Aug. 1877	
	Nicholas John Brown	Minister of Lands and Works	13 Aug. 1877	
	James Wilson Agnew	Seat in Ex. Council without office	9 Aug. 1877	
14	Wm. Lodewyk Crowther	Premier without office	20 Dec. 1878	29 Oct. 1879
	Thomas Reibey	Colonial Secretary		
	David Lewis	Colonial Treasurer		
	John Stokell Dodds	Attorney-General		
	Christopher O'Reilly	Minister of Lands and Works		
15	William Robert Giblin	Colonial Treasurer and Premier	30 Oct. 1879	1 Dec. 1881
		Attorney-General and Premier	1 Dec. 1881	15 Aug. 1884
	William Moore	Chief Secretary	30 Oct. 1879	15 Aug. 1884
	John Stokell Dodds	Attorney-General	30 Oct. 1879	15 Aug. 1884
		Treasurer	1 Dec. 1881	
	Christopher O'Reilly	Minister of Lands and Works	30 Oct. 1879	1 Dec. 1882
	succeeded by			
	Nicholas John Brown	Ditto	1 Dec. 1882	15 Aug. 1884
	James Wilson Agnew	Seat in Ex. Council without office	30 Oct. 1879	5 Feb. 1881
	Thomas Christie Smart	Ditto	1 Dec. 1882	15 Aug. 1884
16	Adye Douglas	Chief Secretary and Premier	15 Aug. 1884	8 Mar. 1886
	succeeded by			
	James Wilson Agnew	Ditto	8 Mar. 1886	1 Mar. 1887
	Ditto	Premier only	1 Mar. 1887	29 Mar. 1887
	Henry Isidore Joachim Raphael Rooke	Chief Secretary	1 Mar. 1887	29 Mar. 1887
	William Henry Burgess	Treasurer	8 Mar. 1886	29 Mar. 1887
	John Stokell Dodds	Attorney-General	8 Mar. 1886	15 Feb. 1887
	succeeded by			
	Richard James Lucas	Ditto	25 Feb. 1887	30 Mar. 1887
	Nicholas John Brown	Minister of Lands and Works	8 Mar. 1886	30 Mar. 1887

* On Mr. Fysh's retirement from the position of Premier, in March, 1878, he was succeeded by Mr. Giblin, without any further change in the constitution of the Ministry. The same remark, *mutatis mutandis*, applies to Mr. Douglas (16).

No.	Name of Minister.	Office.	Date of Appointment or of joining the Ministry.	Date of Retirement.
17	Philip Oakley Fysh	Chief Secretary and Premier	30 Mar. 1887	Still in office
	Bolton Stafford Bird	Treasurer		
	Andrew Inglis Clark	Attorney-General		
	Edward Nicholas Coventry Braddon	Minister of Lands and Works		
	succeeded by			
	Alfred Thomas Pillinger	Ditto	29 Oct. 1888	
	George Parker Fitzgerald	Seat in Ex. Council without office		

PARLIAMENTS.

RETURN showing the Number of Parliaments in the Colony of Tasmania since the inauguration of Responsible Government; also the Number of Sessions, and the Dates of Opening and Closing the same.

Number of Parliament.	Number of Session.	Date of Opening.	Day of Closing or Dissolution.	Duration of Parliament in days.
I.	1	2 December, 1856	5 June, 1857	
	2	13 October, 1857	25 February, 1858	
	3	7 September, 1858	5 November, 1858	
	4	9 December, 1858	10 December, 1858	
	5	4 August, 1859	23 September, 1859	
	6	18 July, 1860	4 October, 1860 Dissolved 8 May, 1861.	1861
II.	1	15 August, 1861	1 February, 1862	
	2	22 July, 1862	20 October, 1862 Dissolved 21 October, 1862.	433
III.	1	15 January, 1863	25 March, 1863	
	2	16 June, 1863	29 September, 1863	
	3	13 October, 1863	17 October, 1863	
	4	29 June, 1864	21 September, 1864	
	5	18 July, 1865	29 September, 1865	
	6	31 July, 1866	10 September, 1866 Dissolved 18 September, 1866.	1342
IV.	1	20 November, 1866	20 February, 1867	
	2	20 August, 1867	11 October, 1867	
	3	28 July, 1868	17 September, 1868	
	4	24 August, 1869	22 October, 1869	
	5	23 August, 1870	18 October, 1870 Dissolved 7 August, 1871.	1721
V.	1	7 November, 1871	21 December, 1871	
	2	25 June, 1872	19 August, 1872 Dissolved 20 August, 1872.	287
VI.	1	22 October, 1872	27 December, 1872	
	2	17 June, 1873	31 October, 1873	
	3	21 July, 1874	18 September, 1874	
	4	27 July, 1875	30 September, 1875	
	5	26 October, 1875	3 November, 1875	
	6	12 September, 1876	20 November, 1876	
	7	18 January, 1877	27 January, 1877	
	8	24 April, 1877	17 May, 1877 Dissolved 19 May, 1877.	1670

Number of Parliament.	Number of Session.	Date of Opening.	Day of Closing or Dissolution.	Duration of Parliament in days.
VII.	1	12 July, 1877	9 August, 1877	
	2	25 September, 1877	11 December, 1877	
	3	16 July, 1878	19 June, 1879	
	4	9 September, 1879	11 March, 1880	
	5	10 August, 1880	1 November, 1880	
	6	19 July, 1881	8 November, 1881 Dissolved 5 May, 1882.	1758
VIII.	1	11 July, 1882	6 November, 1882	
	2	24 July, 1883	29 October, 1883	
	3	14 December, 1883	20 December, 1883	
	4	1 July, 1884	24 November, 1884	
	5	21 July, 1885	5 December, 1885 Dissolved 28 June, 1886.	1448
IX.	1	24 August, 1886	8 December, 1886	
	2	7 July, 1887	20 December, 1887	
	3	29 May, 1888	Not closed 31 Dec., 1888.	

EXECUTIVE COUNCIL.

RETURN of Members of the Executive Council of Tasmania on 31 December, 1889.

Name.	Date of subscribing the Oath.	Holding what Office (if any).
Champ, William Thomas Napier ...	1 Nov. 1856	
Smith, Francis ...	1 Nov. 1856	
Dobson, William Lambert ...	6 June, 1861	Chief Justice.
Miller, Robert Byron ...	20 Jan. 1863	
Kennerley, Alfred ...	4 Aug. 1873	
Fysh, Philip Oakley ...	4 Aug. 1873	Chief Secretary and Premier.
Moore, William ...	4 Aug. 1873	
Reibey, Thomas ...	20 July, 1876	Speaker House of Assembly.
O'Reilly, Christopher ...	21 Aug. 1876	Commissioner of Mines.
Agnew, James Wilson ...	9 Aug. 1877	
Brown, Nicholas John ...	11 Aug. 1877	
Dobson, Alfred ...	13 Aug. 1877	Solicitor-General.
Dodds, John Stokell ...	20 Dec. 1878	Puisne Judge.
Smart, Thomas Christie ...	1 Dec. 1882	
Douglas, Adye ...	15 Aug. 1884	
Burgess, William Henry ...	15 Aug. 1884	
Lucas, Richard James ...	28 Feb. 1887	
Rooke, Henry Isidore Joachim Raphael ...	1 Mar. 1887	
Braddon, Edward Nicholas Coventry	29 Mar. 1887	Agent-General.
Bird, Bolton Stafford...	29 Mar. 1887	Treasurer.
Clark, Andrew Inglis ...	29 Mar. 1887	Attorney-General.
Pillinger, Alfred Thomas ...	29 Oct. 1888	Minister of Lands and Works
Fitzgerald, George Parker ...	Ditto	

LEGISLATIVE COUNCIL.

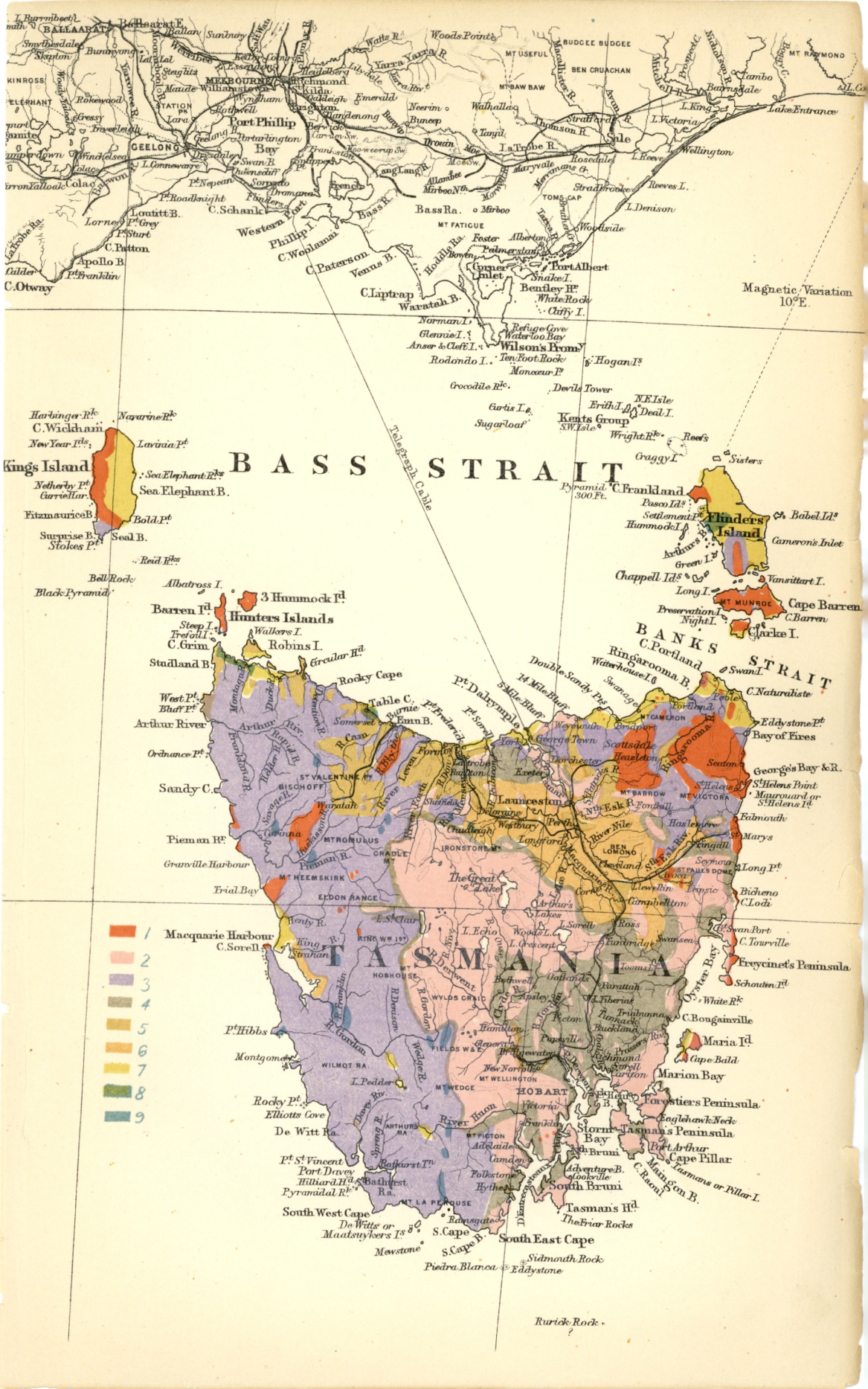
RETURN of Members of the Legislative Council of Tasmania on 31 December, 1889.

Name of Member.	Name of Electoral District.	Date of Election.	Holding what Office (if any).
Coote, Audley	Tamar	7 May, 1889	
Crosby, William	Hobart	9 May, 1887	
Dodery, William	Westmorland	7 May, 1889	Chairman of Committees.
Fysh, Philip Oakley	Buckingham	7 April, 1887	Chief Secretary & Premier.
Gellibrand, Walter Angus Bethune	Derwent	7 May, 1889	
Gibson, James	South Esk	26 Mar. 1886	
Grubb, Frederick William	Meander	3 May, 1887	
Hart, William	Launceston	8 May, 1888	
Hodgson, William	Pembroke	3 May, 1887	
Lord, John	Cambridge	8 July, 1885	
M'Call, John Hair	Mersey	8 May, 1888	
M'Gregor, Alexander	Hobart	5 May, 1887	
Moore, William	Russell	20 Nov. 1885	President of the Council.
Page, Alfred	Macquarie	26 July, 1887	
Rooke, Henry Isidore Joachim Raphael	North Esk	10 Mar. 1887	
Salier, George	Hobart	3 July, 1887	
Scott, John	Launceston	13 July, 1886	
Watchorn, John	Huon	8 May, 1888	

HOUSE OF ASSEMBLY.

RETURN of Members of the House of Assembly on 31 December, 1889.

Name of Member.	Electoral District.	Date of Election.	Holding what Office (if any).
Barrett, Peter	North Launceston	26 July, 1886	
Belbin, William	South Hobart	26 July, 1886	
Bird, Bolton Stafford	Franklin	13 April, 1887	Treasurer.
Brown, Nicholas John	Cumberland	17 July, 1886	
Bennett, William Henry	Campbell Town	30 April, 1889	
Burgess, William Henry	West Hobart	26 July, 1886	
Clark, Andrew Inglis	South Hobart	7 April, 1887	Attorney-General.
Conway, Harry	George Town	17 July, 1886	
Crisp, Alfred	North Hobart	30 April, 1886	
Crowther, Edward Lodewyk	Kingborough	26 July, 1886	
Davies, John George	Fingal	17 July, 1886	
Dooley, James Monaghan	East Devon	26 July, 1886	
Dumaresq, Henry	Longford	17 July, 1886	
Falkiner, John William	Evandale	17 July, 1886	
Fenton, Charles Benjamin Monds	Wellington	26 July, 1886	
Fitzgerald, George Parker	West Hobart	26 July, 1886	
Gill, Henry Horatio	Kingborough	15 Mar. 1887	
Featherstone, Charles Edward	Sorell	11 Feb. 1889	
Hamilton, John	Glenorchy	18 June, 1887	
Hart, John	Deloraine	26 July, 1886	
Hartnoll, William	South Launceston	26 July, 1886	
Hawkes, Samuel	Ringarooma	26 July, 1886	
Huston, George Francis	New Norfolk	26 July, 1886	
Lette, Henry Elms	North Launceston	26 July, 1886	Chairman of Committees.
Lewis, Neil Elliott	Richmond	26 July, 1886	
Lyne, John	Glamorgan	26 July, 1886	
Mackenzie, Charles John	Wellington	26 July, 1886	
M'Call, John	West Devon	30 Oct. 1888	
Mugliston, Henry Boyes	Brighton	26 July, 1886	
Pillinger, Alfred Thomas	Oatlands	8 Nov. 1888	Minister of Lands and Works.
Reibey, Thomas	Westbury	17 July, 1886	Speaker of the House.
Scott, David	South Launceston	26 July, 1886	
Sidebottom, William	Selby	17 July, 1886	
St. Hill, Windle Hill	North Hobart	17 July, 1886	
Sutton, Edmund Henry	Cressy	26 July, 1886	
Young, Arthur	East Devon	26 July, 1886	


BASS STRAIT
TASMANIA
BANKS STRAIT
Magnetic Variation 10° E.
Telegraph Cable
BALLAARAT
MELBOURNE
Port Phillip Bay
GEELONG
Port Phillip
Western Port
Phillip I.
C. Schanck
C. Woolamai
C. Paterson
Venus B.
C. Liptrap
Waratah B.
Bass Ra.
Mirboo
MT FATIGUE
Port Albert
Corner Inlet
Snake I.
Bentley Hr.
Whale Rock
Cliffy I.
Wilson's Promy
Rodondo I.
Hogan Is.
Monceur Pt.
Crocodile Rk.
Devils Tower
Curtis I.
Sugarloaf
Kents Group
S.W. Isle
N.E. Isle
Erith I.
Deal I.
Wright Rk.
Reefs
Craggy I.
Sisters
Pyramid 300 Ft.
C. Frankland
Pasco Is.
Settlement Pt.
Hummock I.
Flinders Island
Babel Is.
Cameron's Inlet
Arthurs R.
Green I.
Chappell Is.
Vansittart I.
Long I.
MT MUNROE
Cape Barren
C. Barren
Preservation I.
Night I.
Clarke I.
C. Portland
Ringarooma B.
Waterhouse I.
Swan I.
C. Naturaliste
Eddystone Pt.
Bay of Fires
Georges Bay & R.
St Helens Point
Maurouard or St Helens Id.
Falmouth
St Marys
Long Pt.
Bicheno
C. Lodi
Swan Port
C. Tourville
Freycinet's Peninsula
Schouten Id.
White Rk.
C. Bougainville
Maria Id.
Cape Bald
Marion Bay
Forestiers Peninsula
Eaglehawk Neck
Storm Bay
Tasmans Peninsula
Port Arthur
Cape Pillar
Tasmans or Pillar I.
Maingon B.
Racoon
Tasmans Hd.
The Friar Rocks
South Bruni
Adventure B.
Lookville
Bruni
Hobart
Victoria
Franklin
Brighton
Launceston
Westbury
Deloraine
Exeter
Longford
Perth
Evandale
Norfolk Plains
Campbell Town
Ross
Oatlands
Tunnack
Buckland
Triabunna
Swansea
Spring Bay
Orford
Prosser R.
Richmond
Sorell
Carlton
New Norfolk
Derwent
Huon
Port Esperance
Recherche Bay
Cape Sorell
Macquarie Harbour
Hells Gates
Mewstone
South West Cape
De Witts or Maatsuykers Is
S. Cape B.
South East Cape
Sidmouth Rock
Eddystone
Piedra Blanca
Rurick Rock
Kings Island
C. Wickham
Lavinia Pt.
Sea Elephant R.
Sea Elephant B.
Bold Pt.
Seal B.
Fitzmaurice B.
Surprise B.
Stokes Pt.
Barren Id.
3 Hummock Id.
Hunters Islands
Robins I.
C. Grim
Studland B.
Rocky Cape
Table C.
Burnie
Emu B.
Arthur River
Ordnance Pt.
Sandy C.
Piemans R.
Granville Harbour
Trial Bay
Pt. Hibbs
Rocky Pt.
Elliotts Cove
De Witt Ra.
Pt. St Vincent
Port Davey
Hilliard Hd.
Pyramidal Rk.
Bathurst Pt.
Bathurst Ra.
Albatross I.
Bell Rock
Black Pyramid
Reid Rks
Pt. Dalrymple
Double Sandy Pts
14 Mile Bluff
5 Mile Bluff
Swan R.
Ringarooma R.
Scottsdale
Derby
Weymouth
George Town
Launceston
Evandale
Perth
Longford
Westbury
Deloraine
Exeter
Campbell Town
Ross
Oatlands
Tunnack
Buckland
Triabunna
Swansea
Spring Bay
Orford
Prosser R.
Richmond
Sorell
Carlton
New Norfolk
Derwent
Huon
Port Esperance
Recherche Bay
Cape Sorell
Macquarie Harbour
Hells Gates
Mewstone
South West Cape
De Witts or Maatsuykers Is
S. Cape B.
South East Cape
Sidmouth Rock
Eddystone
Piedra Blanca
Rurick Rock
1
2
3
4
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CHAPTER IV.

Crown Lands.

ADMINISTRATION.

All business connected with the sale, leasing, or disposal of Crown lands is administered by the Minister of Lands and Works, who presides over the four branches of Lands, Surveys, Works, and Mines. Of these four divisions the Public Works branch deals with the expenditure of all moneys voted by Parliament for the construction of Public Works, or arising from the Road Fund provided for under the 113th Section of the Crown Lands Act; these works are carried out under the direction of the Engineer-in-Chief. The Mines Office, under the control of the Secretary of Mines, deals with all matters connected with the leasing of Crown Lands for mining purposes. The Lands Branch is under the supervision of the Deputy Commissioner of Crown Lands, and matters relating to the Survey Branch are entrusted to the care of the Deputy Surveyor-General.

To facilitate the despatch of business, the Heads of the various Departments pay periodical visits to Launceston and other important centres.

PART I.

LANDS AND SURVEYS.

(By E. A. COUNSEL, *Esq., Deputy Surveyor-General).*

The business of the Lands and Survey branches is transacted by virtue of the Crown Lands Act, 1890, (54 Vict. No. 8). This Act is a consolidation of the twelve Acts previously in operation.

For the convenience of survey operations, the Colony has been divided into thirteen Survey Districts. The names and addresses of the District Surveyors are as follows:—

Name.	Address.	District.
F. E. Windsor	Wynyard	Wellington, Russell, Devon
R. Hall	Leith	Devon.
J. A. Sorell	Launceston	Devon, Westmorland.
H. J. Chalmers	Latrobe	Devon, Westmorland.
C. W. Lord	Invermay	Dorset, Cornwall.
E. G. Walpole	Moorina	Dorset.
G. C. Smith	Fingal	Dorset and Cornwall, Glamorgan.
W. M. Hardy	Hobart	Glamorgan, Pembroke, Monmouth.
T. Frodsham	Hobart	Buckingham, Cumberland, Monmouth.
H. Combes	Longley	Buckingham.
E. G. Innes	Franklin	Buckingham and Kent.
D. Jones	Waratah	West Coast.

The District Surveyors will always be prepared to give information to intending selectors without charge, unless the selector should wish the Surveyor to personally visit the land before an application is made.

DIGEST OF THE LAND LAWS.

Lands of the Crown are defined to be any land in the Colony which are or may become vested in the Crown, and have not been and are not dedicated to some public use.

The Governor in Council, if he thinks fit, may, by Proclamation, withhold or withdraw from selection, sale, or leasing any Lands of the Crown.

The Governor in Council may make, alter, or amend Regulations under the Crown Lands Act, such Regulations to be published in the *Gazette.*

The Minister of Lands for the time being is the Commissioner for the disposal of Lands of the Crown, and has the power of making all contracts, leases, or licences, and in such capacity may sue or be sued.

The Governor in Council may appoint one or more Deputy Commissioner or Commissioners of Crown Lands.

The Governor in Council may from time to time appoint a Conservator of Forests, who shall, subject to the control of the Commissioner, have the management of all land reserved for the preservation and growth of timber, and also of such other portions of Crown Land as may be assigned to his care.

Classification of Lands.

Lands are divided into two classes:—

I. Town Lands, comprising all Lands situate within the cities of Hobart and Launceston, and all Lands within a distance of five miles from the nearest point of any part of the boundaries of either Hobart or Launceston, and all Lands situate within the limits of any town now or hereafter proclaimed or reserved for such purpose by the Governor in Council:

II. Rural Lands, comprising all Lands not classed as Town Lands.

The Commissioner may decline to enter into a contract or to refuse any application for the sale and purchase of any Crown Land in any case in which the Land selected or applied for is known to the Commissioner to be auriferous or to contain Minerals.

The Governor in Council may, by Proclamation in the *Gazette*, except from sale and reserve to Her Majesty such land as he sees fit for the preservation and growth of Timber.

The Governor in Council may, by Proclamation in the *Gazette*, declare that no person, although he be duly licensed or otherwise authorised, shall cut or remove live timber or any particular description of timber or bark from such portions of Crown Lands as are named in such Proclamation.

Reserves for Public Purposes.

The Governor in Council may, by Proclamation in the *Gazette*, except from sale and reserve to Her Majesty such Lands as may be required for—

I. Public Roads or other internal communications whether by land or water:

II. Military or Defence purposes:

III. Sites for the erection of Public Libraries, Museums, Literary or Scientific Institutions, Hospitals or Almshouses for aged or infirm poor, or places for the interment of the dead:

IV. Sites of Public Quays, Breakwaters, or Landing-places on the sea-coasts or shores of navigable streams:

V. Sites for Trigonometrical Stations or for other purposes connected with the Survey of *Tasmania*:

VI. Places for the recreation and amusement of the inhabitants of any city, town, or village:

VII. The construction of Irrigation Works or of Dams, Reservoirs, Aqueducts, Watercourses, or other works for the supply of water to any city, town, or district:

VIII. Any other purpose of public safety, convenience, health, or enjoyment.

The Governor in Council may, by notice in the *Gazette*, exempt from sale and reserve as a school allotment any portion of the lands of the Crown wherever situate not exceeding five acres in extent, and thereupon the same shall become vested for the purposes of The Education Act, 1885.

It shall not be lawful for the Governor or the Governor in Council to except from sale and reserve to Her Majesty, or to dispose of under this Act, any Crown Lands as sites of places of public worship or for any other religious purposes.

Nothing contained in this Section shall be held to apply to any Lands which have, before the seventeenth day of September, 1868, been reserved for sites of places of public worship of any religious denomination.

In every Town that may hereafter be surveyed and subdivided for sale, before any Lots are put up for auction the Commissioner shall set apart any area not exceeding Twenty acres of Land for recreation purposes, in one or more blocks, and such other blocks for such other public purposes as he may deem necessary in accordance with the provisions in Section Twenty-four of this Act.

When any land has been reserved for streets, roads, &c., and not used by the public, or no longer required, the Governor in Council may revoke such reservations, and may sell such land.

Selection of Land.

The following persons shall not be eligible to select or hold Land under Part I. of this Act:—

I. Any person who is the selector of Three hundred and twenty acres of Land, in one or more lots, on credit under this Act, and for which the whole of the purchase money has not been paid:

II. Any person who is the selector of Three hundred and twenty acres of Land, in one or more lots, on credit under the provisions of any previous Act regulating the sale and disposition of Crown Lands, and for which the whole of the purchase money has not been paid:

Any person of the age of Eighteen years and upwards, not disqualified under the preceding Section, may select and purchase under this Act, by private contract, at the price and upon the terms set forth hereunder one Lot of Rural Land not exceeding Three hundred and twenty acres nor less than Fifteen acres.

	£	s.	d.
100 acres at 20*s.*	100	0	0
Add ⅓ for credit	33	6	8
	£133	6	8

	£	s.	d.
Cash at time of purchase	3	6	8
First year	5	0	0
Second year	5	0	0
Third year	10	0	0
Fourth year	10	0	0
Fifth year	10	0	0
Sixth year	10	0	0
Seventh year	10	0	0
Eighth year	10	0	0
Ninth year	10	0	0
Tenth year	10	0	0
Eleventh year	10	0	0
Twelfth year	10	0	0
Thirteenth year	10	0	0
Fourteenth year	10	0	0
	£133	6	8

and so in proportion for any greater or smaller area than one hundred acres: but credit will not be given for any sum less than £15.

Any person wishing to purchase Waste Lands must make application upon a printed form, to be obtained from the Lands Offices, at Hobart and Launceston, at the various post offices and police offices, or from any District Surveyor.

The applicant must state the area required, describe its position as accurately as possible with reference to some fixed point, and forward the application to the Commissioner of Crown Lands, with the fee of one shilling.

The form having been filled up and forwarded to the Lands Office, Hobart, if it appears from the description given that the land is available for selection, the applicant will be called upon to pay the survey fee in accordance with the subjoined scale; failing to deposit the survey fee within thirty days after the date of demand the application will be cancelled. The acceptance of Survey Fee will not be considered to confer upon the Selector any estate in the land, or any right or title thereto.

Survey Scale.

	£	*s.*	*d.*
Residence Area on Gold Field	2	10	0
25 acres and under	3	2	6
Above 25 and not exceeding 50 acres	5	0	0
„ 50 „ 100 „	8	15	0
„ 100 „ 150 „	10	0	0
„ 150 „ 200 „	11	5	0
„ 200 „ 250 „	12	10	0
„ 250 „ 320 „	13	15	0
Single Town Allotment	1	11	0
Ditto Suburban	3	2	6
Survey of Town Allotment for Real Property Act	2	2	0

Upon payment of the survey fee, a Surveyor will be instructed to mark off the land applied for. Should the Surveyor discover that more than one person has applied for the same land, the application first received at the Lands Office will have priority.

Should two or more applications for the same land be received simultaneously, the lots will be disposed of by tender from the applicants.

After the Surveyor's plan has been received, examined, and approved of, the applicant will be called upon to pay the first deposit, and thereupon the Commissioner and the applicant will mutually enter into a contract for the sale and purchase of the land at the price, on the terms, subject to the conditions of the Act.

Selections as a general rule are laid off in rectangular blocks the lines bearing to the Cardinal Points of the compass: but lots fronting on a Road, River, Lake, or the Sea have their width regulated as not to exceed the proportions of one to two, the first figure representing the width.

Every person who has selected may make a further selection, provided that the total area held by him by virtue of such selections does not exceed Three hundred and twenty acres, nor consist of more than Three Lots, and, if such Lots adjoin the total frontage on any road or stream, shall not exceed the maximum frontage that would be allowed if the selections had been made in one Lot.

Additional selections shall be subject to all conditions of original selections.

No person shall become the purchaser of any Crown Land under this Part of this Act who is in respect of the Land which he applies to purchase, or any part thereof, a servant of or an agent or trustee for any other person, or who at the time of his application has entered into any agreement express or implied to permit any other person to acquire by purchase or otherwise any

such Land or part thereof; and all contracts, agreements, and securities made and entered into shall be illegal and void, and the land, with all improvements thereon, shall be absolutely forfeited to the Crown. Any person who shall enter into any such contract or agreement shall be guilty of a Misdemeanor, and on conviction thereof be liable to be fined in any sum not exceeding One hundred Pounds, or to be imprisoned for any term not exceeding Two years.

Every applicant between the ages of eighteen and twenty-one years shall state in his application that he is of the full age of eighteen years.

Every purchaser of Crown Lands between the ages of eighteen and twenty-one years who shall enter into any agreement for the performance of any work or rendering of any services on such purchase, &c. shall be subject to the same liabilities and have the same rights in respect of such agreement as if he were of the full age of twenty-one years.

Roads.

So soon as five hundred acres of Crown lands are selected for purchase under Part II. or III. of the Crown Lands Act, in not less than five lots, adjoining or within a short distance of one another, the Governor in Council authorises the expenditure, upon the construction of roads in the vicinity, of a sum equal to Ten Shillings for each acre so selected and settled upon.

One-fourth of the proceeds of the sale, lease, &c. of Waste lands, not including lands sold as above, is set apart to form a fund for the construction of certain Public Works, and out of this fund assistance is given to Road Trusts under certain conditions, and the residue of the fund is applied to the construction of roads and bridges generally.

Large sums are also voted annually by Parliament to be expended upon roads and Public Works generally.

Sale by Auction.

All Rural Lands not held by any selector, and not excepted from sale under this Act, may be sold by public auction. All Town Lands are sold by public auction, and not otherwise.

The lowest upset price of Crown Land offered for sale by auction is fixed at one pound per acre. Lands to be offered by auction shall, before sale, be surveyed and delineated in the public charts of the Colony. Lots of Agricultural land must not exceed three hundred and twenty acres each.

Sales by Private Contract.

If after a sale by auction any lots remain unsold, the Commissioner, within twenty-one days, causes a list of such lots to be prepared, and a notice published in the *Gazette* to the effect that, fourteen days after the date of notice, the lands included in such list may be sold by private contract, at the upset prices therein specified; and such lands will be sold to the first applicant; but if more than one application be received for the same lot at the same time, the lot must again be put up for auction.

Applications to purchase lands under this section must be made within one year after the lands were last put up for sale by auction, and before the publication of any subseqnent notice of sale thereof by auction.

The terms of payment for lands sold by private contract are exactly the same as the terms of payment for lands sold by auction.

No lands within five miles of Hobart or Launceston may be sold by private contract.

Mining Areas.

Mining Areas may be declared by the Governor in Council on any Gold-Field or lands reserved under the Mineral Lands Act.

Crown Lands in Mining Areas may be selected or sold by auction. If within one mile from any Town Reserve, lots must not be less than one acre or greater than ten acres. If at a greater distance than one mile from the nearest boundary of any Town Reserve, such lots must not be less than ten or greater than one hundred acres each.

The sale by auction is arranged in the same manner as the other auction sales already described.

The upset price of such lands is fixed at not less than one pound per acre, payable in fourteen years in like proportion to the scale set forth on page 59.

Any lands selected or bought at auction within any Mining Area must be occupied by the purchaser thereof or by some member of his family, by habitually residing thereon for at least five years, before a grant shall be issued for such land, and in default of the land being so occupied, it shall be liable to be forfeited to the Crown. Such term of five years shall commence one year after the date of purchase.

Lands selected or bought at auction within any Mining Area shall be open to any person to search or mine for gold or any mineral thereon.

Any person desirous of searching or mining on such land must apply in writing to a Commissioner of Mines, and the Commissioner will thereupon give notice to the occupant or owner of the land, and will arrange with him for the appointment of a person to act with the Commissioner in assessing compensation to be made for damages sustained. In estimating such damages no account may be taken of the value of the gold or minerals the land may be supposed to contain.

If mining operations are discontinued on the land, the owner may resume possession of the portion which may have been occupied for mining.

All Regulations made under any Act relating to mining for gold, &c., and at the time in operation, shall, so far as consistent with such Regulations, be applicable to and for the purposes of this Act.

Where the Commissioner has reason to believe that any Crown Land selected under this Act is auriferous or contains minerals, such land may be sold subject to the conditions relating to lands within Mining Areas.

Any person who has occupied land in a mining town under a Business Licence, Miner's Right, or Residence Licence, and can prove that he has erected thereon improvements to the value of £50, may purchase one quarter of an acre at the price of ten pounds. Should he decline to purchase, the Commissioner may give the occupier three months' notice and then sell the property, repaying the value of all improvements.

Conditions of Purchase.

Not less than one month before the sale of any lands by auction, lists of all lands to be submitted for competition are published in the *Gazette* and the newspapers, the upset prices as fixed by the Governor in Council being mentioned, and lithographed plans of the various lots circulated throughout the Colony. Sales are held in Hobart, Launceston, Latrobe, Emu Bay, and such other places as the Minister may appoint.

Lots may be purchased at auction for cash, or for credit, provided the price exceeds Fifteen Pounds. If the purchaser elects to pay cash he is required to pay in ready money at the time of sale a deposit of one-fifth of the

price, and the residue within one month next after the time of sale, and unless he pays the residue within the time allowed the sale becomes void and the deposit is forfeited.

If the purchaser wishes to obtain credit, a sum equal to one-third of the price is added by way of premium for the allowance of credit, and the amount of the price and premium is called the "purchase money;" of this sum the purchaser pays one-eighth at the time of sale, and the residue is payable in annual instalments of one-thirteenth of the balance of the purchase money, the first instalment being due one year after the date of sale.

Discount allowed for Prepayment of Instalments.

A purchaser on credit may pay off the balance unpaid under the contract, and is allowed a deduction equivalent to the amount of interest added to the unpaid instalment by way of credit premium. Provided that such purchaser has made substantial improvements upon the land to the value of twenty shillings per acre of the land selected.

The Purchaser of Land on Credit to make substantial Improvements thereon.

The purchaser of any land upon credit shall begin to effect improvements thereon at the expiration of one year from the date of contract, and shall continue in each year during the eight consecutive years thereafter to expend not less than two shillings and sixpence per acre of the land purchased; and in default of making such expenditure, the land shall be forfeited to the Crown. But any purchaser having expended more than two and sixpence per acre in any one year, shall be entitled to credit against his liability for any subsequent year.

The total amount to be expended in improvements need not exceed one pound per acre.

Postponed Instalments to bear Interest.

The balance of the purchase money due upon any Crown Land purchased on credit prior to the date of this Act may be paid off subject to the terms and conditions of the Act under which such land was purchased.

The Governor in Council may postpone the payment of any instalment on land purchased under this Act for any period not exceeding two years. But any such postponed instalment shall bear interest at the rate of five pounds per cent. for each year so postponed.

Whenever any land purchased under this Act has become liable to forfeiture on account of failure to make the necessary improvements thereon, the Governor in Council may postpone the time for effecting such improvements for any term not exceeding two years.

Default in Payment of Purchase Money.

In all cases where land has been sold on credit, if default is made in the payment of any instalment, and the same is not paid within sixty days after it has become payable, the Commissioner may cause a list of defaulters to be prepared and published in the *Gazette* and newspapers, with a notice stating that the lands included therein will be put up for sale by auction, and specifying in such notice the day, time, and place at which such auction shall be held.

A defaulter may save his land from sale if before the day fixed for auction he pays the overdue instalment with interest at the rate of six per cent., and such sum, not exceeding twenty shillings, as the Commissioner may fix, to cover the expense of advertising.

The Governor in Council may postpone the sale of any lands on which payment is overdue if the defaulter addresses him by petition stating such facts as may be considered sufficient to induce the Governor to stay the sale.

If the payment of arrears is not made before the day of sale, the land reverts to the Crown, and is put up for auction at an upset price, not less than the balance of purchase money remaining unpaid under the contract, together with the amount of the deposit, and at this price the Commissioner may buy in the land. If the land brings more than the upset price, the Crown retains the amount of such upset price, returning to the defaulter any excess over that price. Any person buying default land must pay one-fifth of the price at the time of sale, and the balance within one month.

Land not alienable until paid for.

No purchaser on credit shall be allowed to transfer his interest in the land without the written consent of the Commissioner.

On the consent of the Commissioner being obtained a transfer fee of threepence in the Pound on the purchase money is required.

All arrears of instalments must be paid before the Commissioner's consent to transfer can be given.

If a purchaser on credit becomes bankrupt his interest passes to his trustee. A purchaser on credit may devise his interest, and if he dies intestate his interest becomes part of his personal estate and passes to his representative, who holds the land upon the same terms as the intestate.

Lands are conveyed by grant deed, for which a fee of fifteen shillings is charged. The whole of the purchase money must first be paid. Grants are issued in duplicate, and are enrolled and delivered to the Recorder of Titles, who registers and deals with them in the manner provided for by the Real Property Act.

All lands alienated under the Crown Lands Act or any previous Act for five years after the date of alienation are liable to be resumed for mining purposes on payment of compensation for the value, other than that of gold or other minerals, of the lands and improvements so resumed.

When the purchase money in full has been paid, together with the grant deed fee, if the purchaser wishes the deeds to be made out in any name other than the party to the contract, he must make a written request to the Commissioner, informing him of the names of the persons in whose favour the deeds are to be made out, the signatures of such request to be witnessed by a Justice of the Peace. In such cases a fee of threepence in the pound on the purchase money will be charged for transfer.

When grant deeds are issued from the Lands Office the purchaser is notified of the fact, and the Lands Office is then no longer responsible; the deeds after enrolment are forwarded to the Recorder of Titles, who notifies to the purchaser the fees payable under the Real Property Act, and issues the deeds from his Office, or from the Branch Office, Launceston.

Every grant deed of any Crown Land within the boundaries of any Town on any proclaimed Gold Field or Lands withdrawn from sale under this Act shall contain a reservation to the Crown of the right to mine for Minerals under such land at a depth of fifty feet from the surface. Such reservation shall apply to Crown Lands which have been purchased before the passing of this Act, but for which no grant deed has been issued.

Leases to occupy for Grazing purposes.

Unoccupied country may, if the Commissioner sees fit, be exposed to auction in runs of such extent as the Commissioner may direct. Such runs are liable at any time to be sold or licensed, or occupied by virtue of a miner's right or licence, for other than pastoral purposes, and to be otherwise alienated and dealt with.

The rent is fixed by the Commissioner, and the run is put up for auction, the highest bidder receiving a lease to occupy the same for fourteen years.

The interest in a run may be transferred by consent of Commissioner on payment of the fee of one shilling in the £ on the annual rental.

The lease may contain such condition as the Governor in Council may approve, and on violation of condition the Commissioner may forfeit and revoke such lease.

The lessee may cultivate so much of the run as may be necessary to provide such produce as may be required for the use of his family and establishment, but not for the purpose of sale or barter.

With the consent of the Commissioner, and on payment of the sum of ten pounds, runs may be divided.

If the value of any run is diminished by sale or other disposal of any portion of it, the Commissioner, upon application of the lessee, may reduce the rent.

The rent is payable half-yearly in advance, on the first day of April and the first day of October.

A lease is determinable if the rent remains unpaid for one month after it becomes due, and is also determinable if the lot is required for sale or any public purpose,—in such case six months' notice must be given to the lessee before the land is resumed by the Crown, and the lessee becomes entitled to receive from the Crown compensation for the value of all fences, buildings, and other permanent improvements he may have made during the currency of his lease.

The rent overdue on any Crown Land may be recovered by process of law.

Leases for other than Pastoral purposes.

The Governor in Council may grant leases for a period not exceeding fourteen years of any land bordering upon a navigable river, or on the sea, &c., if required for the purpose of constructing wharves, docks, slips, or any other works of public utility. No such lease may interfere with the right of access to the sea, river, &c. on the part of any neighbouring proprietor, nor may it injuriously affect the navigation. For whatever purpose the land is leased, the lease may be determined in case of non-completion of the works, or violation of any conditions under which the lease was granted; and in any case the land may be resumed if required for the defence of the Colony.

The Governor in Council may also, under similar conditions, grant leases for a period not exceeding fourteen years, for the right of constructing water-courses, &c. across any Crown Lands; and may similarly lease for a period not exceeding thirty years any portion of a Crown reserve for the purpose of the construction thereon of any manufactory, mill, or such other work; but no such lease may tend to the obstruction of any road or the pollution of any river.

Every such lease shall be liable to forfeiture in case of non-completion of the works for which the lease was granted.

Leases of Islands.

The Commissioner may let by public auction any island or part thereof for a term of fourteen years; notice to be published in the *Gazette* and in one newspaper published in Launceston and Hobart respectively, at least sixty days beforehand. The rent is payable half-yearly in advance.

Leases of Land for Railways, &c.

The Commissioner may lease for any period not exceeding fourteen years to any person applying for the same any land required for the purpose of constructing tramways or railways, the Governor in Council fixing the terms and conditions.

Licences to reside on Gold Fields.

Licences to reside on Gold Fields may be issued by the Commissioner, entitling the holder to reside on and cultivate any land not exceeding five acres. Such licence to continue in force for a period not exceeding one year from the date of issue, and subject to the following and any other conditions the Commissioner may impose :—

The licence will not be granted for the occupation of lands comprised within reserves or towns.

Lands so situated that the occupation thereof would obstruct access of holders of Miners' Rights, wood or other licences, to timber and water.

Land comprising two or more detached portions.

Lands situated on both banks of a river or creek, or on both sides of a roadway or frequented track.

Lands required for mining purposes, or if included in any mining claim or held under mining lease, unless with the consent in writing of the claim-holders or lessees first had and obtained.

Lands whereon are any dwellings, improvements, or crops, not the property of the applicant for a licence.

The licence fee is 10*s.* per acre per annum, payable in advance.

The licence only confers the right to use the land for the purpose for which the licence has been issued, and for no other purpose whatsoever.

The licensee may not assign, sublet, or part with his interest without the Commissioner's consent.

The licensee must reside upon his land, or enclose it with a substantial fence, and cultivate at least one-fifth portion thereof.

The land may be resumed for mining purposes on payment of compensation for damage done.

Any miner may, with the consent of the Commissioner, enter upon the land and search for gold without paying compensation, except for damage done to any orchard, garden, or crops.

Any persons possessed of the right to mine on the land may occupy the land for mining purposes without paying compensation.

The Governor in Council may resume the land if required for any public purpose, compensation being decided by a Commissioner of Gold Fields.

Timber Licences.

The Governor in Council has the power to set apart such lands as he considers fit for the preservation and growth of timber, and may also prohibit the cutting of timber upon any Waste Lands he may specify in his Proclamation.

The Commissioner may authorise Timber Licences to be issued for cutting timber, &c. on any lands available for the purpose. Regulations under which such licences are issued are as follows :—

Timber Licences, &c.

Licences to fell, split, and saw timber may be obtained by application through the Police, the Bailiffs of Crown Lands, or any person whom the Minister may appoint for that purpose, on payment of the under-mentioned Fees. The licence will be in the form in the Schedule A. of the Crown Lands Regulations, and only applies to the particular locality for which it is issued.

Fees.

Purpose of Licence.	Fee for each person employed.
Fell, split, and saw ordinary timber.....	5*s.* per month.
Fell, split, and saw blackwood	2*s.* 6*d.* per week.
Fell and remove ordinary timber in log	5*s.* per week.
Fell and remove blackwood in log	10*s.* per month.
Burn charcoal from ordinary timber	2*s.* 6*d.* per week.
Make bricks, pottery, and earthenware	£2 10*s.* per quarter.
Procure shells, gravel, earth, &c.	5*s.* per week.

Licences to cut pine and strip wattle-bark are issued under special Regulations, and may be obtained from the Conservator of Forests.

The Minister may, by notice to be published in the *Gazette*, withdraw any Waste Lands of the Crown from the operation of Timber Licences, or may prohibit the cutting of any particular kind of timber in any specified locality.

Timber Licences will not apply to any land applied for by a Selector who has paid Survey Fee for such land, nor to any land set apart for any public purpose.

Lands held under lease from the Crown, lands set apart for townships, and lands surveyed for sale, will be available only by the written authority of the Commissioner.

Timber Licences will not be available for use within the boundaries of any Forest Reserve except by the written permission of the Commissioner of Crown Lands, and subject to such conditions and such fees as he may consider necessary.

The lessee or licensee of any Waste Lands of the Crown occupied for mining or pastoral purposes may notify in writing to the Commissioner any reasonable objections he may have against Timber Licences being granted to any person in respect to the lands held by virtue of such lease, and the Commissioner may, if he sees fit, after investigating such objections, refuse to issue a licence in respect of such leased lands.

The holder of a lease or licence for the occupation of any Crown Lands may cut any timber required by him as tenant of the several lands, but not for the purposes of sale or barter.

Every person holding a Timber Licence must exhibit it, if called upon to do so, to any officer of the Government authorised on that behalf, or to any Bailiff of Crown Lands or of Mines, or to any Police Constable, or to the occupier of any run on which the holder of the Timber Licence may be cutting, or to the agent of such occupier. Any person refusing to produce his licence when so called upon as aforesaid will be deemed to be unlicensed.

A Bailiff of Crown Lands, or any Police Officer, may seize any timber which there is good reason to believe was cut upon any Waste Lands of the Crown without licence, or by a person deemed to be unlicensed under the provisions of the preceding Regulation, and upon the authority of the Commissioner such timber may be sold in such manner as the Commissioner may direct. Provided that fourteen days' notice of such intention to sell be published in the *Gazette*, and at least once in a newspaper.

Timber split or sawn upon any Waste Lands of the Crown and not at once removed, must be stacked, and each stack marked with the licensee's initials; logs not removed must each be branded and numbered, and the licensee shall furnish the Bailiff of Crown Lands or Police with particulars of the number and brands of such logs. Any logs or timber not so marked, and any timber in the log which may remain more than six months upon Crown Lands, may be seized and disposed of as the property of the Crown.

The holder of a Timber Licence, on written notice from a Selector under the 31st Sect. of "Crown Lands Act, 1890," shall desist from cutting or splitting timber upon any Waste lands of the Crown which may have been selected for purchase, and the production of a receipt for the Survey Fee shall be deemed sufficient proof that the land has been selected. The Licensee shall, within Three months from the date of such notice, remove from such land all the timber he may have cut under licence during the period previous to such notice being given. All cut timber remaining upon the land after the expiration of the term of Three months as aforesaid shall be the property of the Selector of the land.

The Licensee will not be entitled to claim more than Three trees that may be felled but not cut up.

No trees may be felled so as to obstruct any road or track.

Licences for the purpose of obtaining and burning Limestone, obtaining earth for the purposes of making Bricks, Pottery, or Earthenware of any description, will authorise the holder to enter upon such Waste Lands of the Crown as the Commissioner may approve of, not exceeding Three acres in extent, and subject to the condition that the same be inclosed with a substantial four-rail or four-log fence not less than 4ft. 6in. in height.

Penalty for destroying Surveyor's Marks.

Every person who wilfully and maliciously removes, alters, defaces, injures, or destroys any Surveyor's pegs or any land-mark, or, with the intent of misleading any person or persons, imitates any Surveyor's mark, shall on conviction of every such offence forfeit and pay a penalty of not less than Ten Pounds and not exceeding Fifty Pounds.

General Observations upon Unalienated Lands suitable for Agricultural Purposes.

The demand for the rich agricultural lands of the Colony continues to be very satisfactory, as the country is being opened up by roads and Public

Works. The greatest advance in selection has taken place in the prosperous counties of Dorset, Devon, and Wellington, where there are still large areas of first-class scrub land unalienated, also large areas of similar country in the counties of Buckingham and Kent awaiting development. These lands contain extensive supplies of good splitting and sawing timber, as well as beds of magnificent blackwood and other timbers of less importance, and are principally of basaltic formation, varying from dark chocolate-coloured soil to light sandy loam. The good land is generally covered with heavy dense scrub, consisting of dogwood, musk, peartree, sassafras, and myrtle, with a dense undergrowth of ferns. Large tree-ferns abound in the gullies, in some instances almost to the exclusion of other growths.

Clearing Land.

The matter of clearing such lands is a serious consideration, and entails a large amount of labour and general knowledge of the work to carry it on successfully. To those, however, who possess the necessary experience, there is nothing very formidable in the undertaking, nor is any great amount of capital required to make satisfactory progress in establishing comfortable homesteads, where every acre cleared will yield cereals, root crops of every description, and all kinds of vegetables and artificial grasses in abundance. The only assistance the *bonâ fide* settler requires is reasonable provision for the transit of his produce to the market.

Settlement in Outlying Districts.

Recognising the great importance of encouraging settlement in the outlying districts, a new Land Act has been prepared and passed into law, containing exceptionally liberal terms to the selector, better security for leasing pastoral lands, and for the disposal of agricultural lands in mining districts. This latter measure is one materially affecting the interests of the country (as in many instances rich land is found in immediate proximity to mining centres). It is deserving of general and substantial support, the more so that it does not contain any conditions prejudicial to the mining industry.

A proposal has been submitted to the Government for a number of exploration surveys throughout the principal districts of the country in order to obtain reliable reports on the situation, extent, and quality of the agricultural lands for the information of intending selectors, and as a guide to the future extension of roads and railways.

The construction of the railway recently opened between Launceston and Scottsdale will give an impetus to cultivation and selection in one of the most important districts of Tasmania, and one that has hitherto been badly served by roads and other facilities for the transit of marketable products. This land is within the County of Dorset, where there is still a tract of unalienated agricultural land extending from the northern slopes of Mount Barrow round to the head waters of the Ringarooma River, comprising some 50,000 acres, equal to anything in the country. The importance of this district will no doubt induce an extension of the Scottsdale Railway to Ringarooma in the immediate future. The survey has already been made to Ringarooma, and the continuation of such survey to Moorina is in course of progress.

Settlement in this district has been much impeded for years, consequent on so much of the land having been withdrawn from sale and selection as a protection against unduly hampering the mining industry. Recognising this fact, a Land Bill was passed by Parliament last year authorising selection in

mining areas. There was a considerable area of land thrown open to selection under this Act in March last, which has resulted in over 3000 acres being applied for. The maximum area allowed being 100 acres has to some extent reduced the acreage that would otherwise have been selected.

At the present time there are some 20,000 acres held under lease for mining purposes in this portion of the County of Dorset, much of which will be taken up for agricultural settlement when the alluvial tin deposits have been worked out.

The Ringarooma land is unquestionably very fertile, and in a partially cleared state has been disposed of at £16 per acre. The climate is excellent, and the district generally is admirably suited to dairying pursuits. In common with the good land in other localities, it possesses very valuable beds of blackwood and other splitting timbers, that will be turned to account by the additional facilities of communication that a railway will afford ; and being backed up by the extensive tin mines of the North-East Coast—stretching away from the Upper Ringarooma to George's Bay—it is unquestionably situated in a most favoured locality.

As showing the rapidity with which selection follows railway construction in similar country, I would remark that, after the Derwent Valley Line was extended from New Norfolk to Glenora, and a Report obtained on the Russell's Falls district, 10,000 acres of land were applied for in two months, varying in area from 25 acres to 320 acres. About 6000 acres of this land have proved to be suitable for agriculture, and have been surveyed in blocks of various dimensions.

The Derwent Valley Railway will no doubt be further extended within the next few years beyond Mount Field West towards the Florentine River, and ultimately on to the West Coast, to join the Strahan-Zeehan Line now being made.

This line of railway will open up not only large areas of good agricultural and pastoral lands, but also some of the most promising mineral country, in which the existence of gold, copper, and other minerals has been known for nearly a quarter of a century.

The North-Western Railway system is now opened for traffic along the North Coast to the town of Ulverstone, and a survey of an inland branch from that town to Nietta is in progress. This line might be carried on for nearly 30 miles through good agricultural land. Already substantial improvements are being made on lands selected 24 miles from the coast.

The North-Western system will no doubt be extended to join the Van Diemen's Land Company's Line at Emu Bay during the next few years. This will bring the Mount Bischoff tin mine into railway communication with the capital of the colony.

The survey for a further extension westward (Emu Bay to Table Cape) is also being effected. The General Manager of Railways has furnished a most favourable report upon the future prospects of this extension from a commercial point of view. When constructed this railway will no doubt give a great impetus to settlement in the County of Wellington, in which county the average annual selection for the last five years is over 7000 acres.

The Brighton-to-Apsley Railway is now drawing towards completion.

The railway from Deloraine, on the Western Line, is now opened to Mole Creek, *viâ* Chudleigh, but there is no immediate prospect of payable returns therefrom.

A railway from Bellerive to Sorell is being constructed. This line will afford a large district the advantages derived from such a mode of communication, and is trending in the direction of a considerable extent of good and passable Crown Land, along portions of the eastern shore of the County of

Pembroke. This tract of country faces Maria Island, situated on the East Coast of Tasmania, and about seven miles distant from the main land at the nearest point. Maria Island is at present leased to a Company bearing that name, and contains 24,000 acres of land, portions of which are of very good quality. The operations of the Maria Island Company have been brought into prominent notice during the last few years, and it is anticipated that a large export trade of lime and Portland cement will be established on the island before long, which will give additional importance to the local district. Already a number of substantial buildings, including a commodious hotel, have been erected by this Company, with several plantations of vines and other improvements, in view of introducing the important industry of viticulture on a large scale.

In these brief notes I have necessarily omitted mention of many important districts, such as the Huon. This district provides a large export of valuable fruits, equal, if not superior, to anything grown in the Australias, the soil and climate being specially adapted to such industry. Owing to the rough and broken nature of the country in this district, it is not in favour with agriculturists ; but to those desiring to turn their attention to the culture of fruit it offers probably greater advantages as to climate, soil, and situation than any other part of Tasmania.

Part II.

Mineral Lands.

(By F. Belstead, *Esq., Secretary of Mines.)*

The mineral-bearing lands of the Colony are dealt with under special laws and regulations, distinct from the Waste Lands Acts. The department is controlled by the Minister of Lands and Works, through the direct supervision of the Secretary of Mines, under whom are appointed Commissioners of Mines and Gold Fields for each division of the Colony, who act judicially in the settlement of disputes, and conduct all business matters connected with the mining industry.

The Gold Fields Acts and Regulations provide for the issue of—

1. *Miners' Rights*, under which, at the annual cost of five shillings, the holder is authorised to search and mine for gold upon any Crown Land, and to acquire possession of a quarter of an acre (or, in the case of abandoned ground previously worked, one acre) of land for mining or residence ; the use of firewood and timber for domestic or mining purposes being also allowed under such right.

2. *Prospectors' Protection Orders.*—Holders of Miners' Rights may, upon payment of the sum of five shillings, obtain from a Commissioner prospecting claims of areas varying from 50 acres to 10 acres, according to their distance from previously known deposits, which they may hold for a period of not exceeding 12 months. Should a discovery be made, the discoverer may secure a claim free of rent of not exceeding five acres in the case of gold in alluvial deposit, or of not exceeding 20 acres in the case of gold in quartz.

3. *Business Licences*, authorising the holder to occupy upon any Gold Field a quarter of an acre of land for business purposes, are issued upon the annual payment of four pounds.

4. *Leases* of areas not exceeding 10 acres are issued for a period of 10 years, with right of renewal, at a rental of one pound per acre per annum, under which the lessee is entitled to mine for gold, to put up and remove any

building or other erection, to cut timber on and remove the same, and to remove stone, clay, or gravel from any Waste Lands of the Crown for the purpose of building for himself any place of residence or for mining purposes. Leases of sites for machinery are also issued for a similar term, and at a like rental.

5. *Grants of Water Rights*, authorising the grantee, his executors, &c. to take and divert water which Her Majesty may lawfully take and divert from any stream, &c. in order to supply water for mining or for the domestic purposes of those engaged in mining, and authorising the holder to cut races, &c. for conveying, and to make dams for conserving such water, are issued for periods of 10 years, at an annual rental of £1 per sluice-head of 16 square inches.

6. *Easement Licences*, authorising the licensee to occupy such Crown Land as may be necessary to enable him to conveniently work the leasehold held by him, to cut drains, make roads, tramways, channels, shafts, &c., are issued for a term of 10 years free of rent.

Provisions are made for the settlement of disputes and partnership questions, regulating the mode of applying for and marking claims and areas, the shape and survey of claims, priority of rights, conditions of working, mode of forfeiture, &c.

Minerals and Metals other than Gold.

The Mineral Lands Acts and Regulations deal with all minerals and metals other than gold. Under these are issued—

1. *Residence Licences*, at a cost of ten shillings per annum, authorising the holder to take possession of and occupy a quarter of an acre of land for residence or business purposes.

2. *Prospectors' Licences*, at a cost of ten shillings per annum, entitling the holder to prospect for minerals upon 20 acres of Crown Land.

3. *Leases*, at an annual rental of five shillings per acre, for any term not exceeding 21 years, with provisions for renewal, of areas not exceeding 80 acres nor less than 20 acres, entitling the holder to mine for and win all minerals and metals not being gold, and to cut timber on and remove the same, and to remove any stone, clay, or gravel from any Crown Land for building for himself any place of residence on the leased claim, or for mining purposes, or for the domestic purposes of those engaged in mining thereon.

For lands containing coal, shale, slate, freestone, or limestone, the area which may be leased shall not exceed 320 acres, and the rental is 2*s.* 6*d.* per acre. Leases at peppercorn rent may be granted to persons who shall discover minerals, of areas not less than 100 acres or more than 320 acres, for coal, shale, slate, freestone, or limestone, and not less than 20 acres or more than 80 acres for any other mineral, according to the distance from a spot where the same mineral is at the time of the discovery known to exist.

4. *Leases of Machinery Sites*, not exceeding five acres, at an annual rental of £1 per acre for a period of 21 years, with provisions for renewal.

5. *Grants of Water Rights* for a term of 21 years, renewable, at an annual rental of £1 per head of 16 square inches, carrying the right to construct races, dams, and reservoirs.

6. *Easement Licences*, for the conveyance and deposit of sludge, construction of roads, tramways, shafts, &c. for a term of 21 years, renewable, are granted to lessees free of rental.

The Law and Regulations provide the mode of settling disputes and partnership questions, adjusting conflicting claims, regulating the marking and survey of areas, conditions of working, forfeiture, &c.

Provisions are further made under separate Acts to enable lessees under any mining Act to acquire easements through or upon any private land; for regulating appeals to the Supreme Court against the decisions of Commissioners in mining cases; for the regulation and inspection of mines; and also for the incorporation and winding-up of mining companies.

Crown Lands—General.

Crown Land Sales.

Of the 16,778,000 acres of land comprising the Colony of Tasmania, about 4,647,988 acres were either granted or sold on the 31st December, 1889. This leaves about 12,130,012* acres as the extent of land not alienated from the Crown on the 31st December, 1889.

The following is a synopsis of the particulars relating to the land sales during the year 1889, together with comparisons in relation to the previous year and to the average of the last decade :—

Crown Land Sales.

	1889.	1888.	1880.	Increase or Decrease as compared with	
				1888.	1880.
Number of Lots—					
Country	723	483	511	240	212
Town and Suburban	435	192	254	243	181
Total	1158	675	765	483	393
Area, Acres—					
Country	50,566	35,671	37,913	14,895	12,653
Town and Suburban	885	706	837	179	48
Total	51,451	36,377	38,750	15,074	12,701
Amount—					
Country £	68,319	47,782	50,337	20,537	17,982
Town & Suburban £	14,051	5794	5042	8257	9009
Total £	82,370	53,576	55,379	28,794	26,991
Amount per Acre—	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Country	1 7 2	1 6 9	1 6 7	0 0 5	0 0 7
Town and Suburban	15 17 6	8 4 2	6 0 6	7 13 4	9 17 0
Mean	1 12 0	1 9 5	1 8 7	0 2 7	0 3 5

During the year 1889 there were sold 51,451 acres of land, as against 36,377 acres sold during the previous year. Of these, 50,566 acres, or 98·28 per cent., were classed as Country lots, and 885 acres, or 1·72 per cent., as Town and Suburban.

The nominal value of 723 Country lots sold is stated to be £68,319, or £1 7*s.* 2*d.* per acre; while the 435 lots of Town and Suburban sold realised £14,051, or £15 17*s.* 6*d.* per acre.

* Including 75,500 acres Lakes.

		Decade ending Year **1889.**	Decade ending Year **1879.**
Acres sold	No.	452,777	404,473
Value of Sales	£	659,836	512,979
Ditto per acre	£1	9*s.* 1·75*d.*	£1 5*s.* 4·38*d.*

That is, the value of lands sold during the last decade realised on the average 3*s.* 9·37*d.* more per acre,—*i.e.*, 14·80 per cent. increase.

Ordinary Crown Lands leased.

The following abstract shows the extent of ordinary Crown Lands leased during 1889, together with the amount of rental due in respect of the same. The corresponding figures for 1888 and 1880 are also given for the purposes of comparison.

Particulars.		**1889.**	**1888.**	**1880.**
Tasmania proper.				
Acres leased	No.	565,667	945,133	1,742,633
Rental	£	4315	7484	7695
Average rental per acre	*d.*	1·83	1·90	1·06
Smaller Island Dependencies.				
Acres leased	No.	64,815	312,981	815,285
Rental	£	481	813	1138
Average rental per acre	*d.*	1·78	0·62	0·33
Tasmania and Dependencies.				
Acres leased	No.	630,482	1,258,114	2,557,918
Rental	£	4796	8297	8833
Average rental per acre	*d.*	1·83	1·58	0·83

Thus, during the year 1889 the extent of ordinary Crown Land leased was 630,482 acres, as against 1,258,114 acres in 1888, and 2,557,918 acres in 1880. The nominal rental, £4796, is less than that of the previous year by £3501, although the average rental per acre has increased from 1·58*d.* to 1·83*d.* The extent of Island dependencies under lease is less than that of the previous year by 248,166 acres.

Mineral Lands leased.

With respect to Mineral Lands leased, the following is a general summary for the years 1885-1889 :—

	1885.	1886.	1887.	1888.	1889.
Gold—					
Number of Leases in force on 31st Dec. ...	189	128	307	279	375
Area ..... No. acres	1835	1308	3083	2869	3568
Rental (nominal) ... £	1835	1308	3083	2869	3568
Tin—					
Number of Leases in force on 31st Dec. ...	740	683	712	1091	879
Area ..... No. acres	29,479	24,879	24,599	33,845	28,557
Rental (nominal) ... £	7370	6219	6150	8461	7139
Other Minerals—					
Number of Leases in force on 31st Dec. ...	28	46	61	162	363
Area ..... No. acres	4626	7304	8647	12,264	25,392
Rental (nominal) ... £	588	923	1173	2387	5386
TOTAL—					
Number of Leases in force.....	957	857	1080	1532	1617
Area ..... No. acres	35,940	33,491	36,329	48,978	57,517
Rental (nominal) ... £	9793	8450	10,406	13,717	16,093

The foregoing comparative table shows a considerable increase as regards Mineral Lands leased, area and rental, during the year 1889.

INDEX TO GEOLOGICAL SKETCH MAP.

Igneous Rocks.

Reference No.	*Colour.*	*Nature of Rock or Formation.*
1	Red	Granites and Porphyries.
2	Pink	Greenstone (Diabase, Diorite, &c.)
5	Gamboge	Basalt (Anamesite, Nepheline, &c.)

Stratified Rocks.

3	Violet	Crystalline and metamorphic schists, clayslates, quartzites, conglomerates, and sandstones of Archæan, Cambrian and Silurian Age.
9	Blue	Silurian limestones.
4	Grey	All rocks lying between the *Upper Silurian* and *Lower Tertiary*, including the Carboniferous and Mesozoic Coal Measures; fossiliferous mudstones, sandstones, and limestones (Upper Palæozoic) and Lower Mesozoic sandstones.
6	Orange-red	Lacustrine deposits of *Tertiary Age*, including leaf-beds, lignites, sandstones, clays, gravel terraces, &c.
8	Green	Marine Beds of *Lower Palæogene Age* (Eocene), including shelly limestones, calcareous sandstones, coral-rag, &c.
7	Yellow	Post Tertiary Deposits, including consolidated sand-dunes, raised beaches, Esker drifts, &c.

CHAPTER V.

Geology and Mineral Products.

Geological Formations.

Brief Outline.

With the exception of certain marine beds belonging to the Cretaceous period, Tasmania presents within her limited boundaries a very complete conspectus of all the rock formations of Australia. All the great systems known to geologists are well represented. Tasmanian geology has engaged the close attention of many distinguished observers during the last 50 years, and its history is now fairly well known. Prominent among its investigators are the following names:—Count Strzelecki, J. Beete Jukes, A. R. C. Selwyn, Rev. W. B. Clarke, Dr. Milligan, Chas. Gould, Rev. J. E. Tenison-Woods, R. Etheridge, jun., Prof. R. Tate, T. Stephens, S. H. Wintle, T. Hainsworth, and G. Thureau. The author of this work has also contributed many papers on stratigraphy and palæontology, and has given a very comprehensive account of the labours of previous observers and of the geology of the Island in his "Systematic Account of the Geology of Tasmania,"* from which the materials of the present sketch have been obtained.

The following is a summary of the great divisions embraced in the classification of the various rock formations:—

Period.	System.	Group.	Formation.	Examples.
CAINOZOIC	QUATERNARY	*Recent*	Native shell mounds, sand-dunes; alluvium; cave-bone deposits.[1]	Sea Coast [1]Chudleigh
		Pleistocene	Raised beaches	North-West Coast, Furneaux Group, Kent's Group
			Helicidæ sandstone	Furneaux Group, Kent's Group
	TERTIARY	*Neogene*	Older terrace drifts	
		Palæogene	Basalts and tuffs and underlying leaf-beds, clays, lignites, older stanniferous and auriferous drifts.	Breadalbane, Beaconsfield, Launceston, Hobart, Waratah, Macquarie Harbour, &c.
			Marine beds	Table Cape, Cape Grim, Flinders' Island

* "Systematic Account of the Geology of Tasmania." By R. M. Johnston, F.L.S., pp. xxi. and 409, and 57 Plates of Typical Fossils, with 23 Engravings, Maps, Sections, &c. Royal quarto. (Hobart, 1888.)

Period.	System.	Group.	Formation.	Examples.
MESOZOIC	...	*Upper*	Later intrusions of diabase (greenstone); sandstones, shales, and coal seams. (Upper Coal Measures)	Fingal, Longford, York Plains, Seymour, Douglas River, Spring Bay, Jerusalem, Impression Bay, Hamilton, Hobart, Sandfly, Port Esperance, &c.
		Lower	Older sandstone formations	Knocklofty, Hobart Waterworks, Cascades, North-West Bay, &c.
PALÆOZOIC	CARBONIFEROUS		Port Cygnet and Bruni Coal Measures	Mount Cygnet Coal Measures, Adventure Bay Coal Measures
			Upper Marine Beds	Mersey, Hobart
			Lower Coal Measures	Mersey, Fingal, Tippagory Range, Henty River
			Tasmanite Beds	Mersey
			Lower Marine Beds	Northern and Eastern Tasmania
	DEVONIAN?		Upper soft slates	Fingal
PALÆOZOIC	SILURIAN		*Eldon Group.*—	
			Lower slates	Fingal
			Eldon Valley clay slates and mudstones	Eldon Valley
		Upper	Brachiopod sandstones and conglomerates	Mount Lyell, Mount Zeehan, Queen River, Magnet Range
			Talcose schists and slates	Queen River, Mount Lyell
			Gordon River Group—	
		Lower	Limestones, conglomerates	Gordon River
			Auriferous slate group	Lisle, Beaconsfield, Fingal
	CAMBRIAN		Primordial Calciferous Group	Mersey
			Magog Group	Chudleigh
			Dikelocephalus Group	Caroline Creek
	ARCHÆAN		Quartzites and metamorphic schists	North-eastern and Western Tasmania

LOWER PALÆOZOIC.

It is difficult in a brief sketch to indicate the distribution of the various rock systems, but in a general way it may be correct to state broadly that the sedimentary rocks of Archæan and Silurian age are mainly exposed, forming remarkably rugged ranges, in the extreme

north-eastern part of the Island in the vicinity of Gladstone, Beaconsfield, Lefroy, Branxholm, Mangana, and George's Bay; and occupy the greater part of the Western Highlands, forming a broad strip running obliquely and continuously between the extremes of the granite headlands of Hummock Island in the north-west to the bold schistose mountains terminating in the southernmost extremity of the Island beyond Mount La Perouse, near South Cape.

The rocks of *Archæan* age, consisting mainly of crystalline schists, mica-schists, and quartzites, are usually greatly metamorphosed, and are characterised by highly folded, tilted, crumpled, and puckered strata. They rarely exhibit any traces of former life.

The *Cambrian* rocks in Caroline Creek, Mersey, consist of rusty sandstone, thinly bedded, usually inclined at a considerable angle. The remains of Trilobites *(Dikelocephalus*, &c.*)* and the tracks of Annelids are very abundant.

The *Silurian* rocks consist mainly of hydro-mica schists, clay slates, sandstones, grits, conglomerates, and thickly bedded close-grained limestones. Although not so greatly metamorphosed as the *Archæan* rocks, they are generally found tilted at high angles, and are usually much folded and dislocated. Their members are frequently penetrated by lodes and veins, and in various parts of the Island, as at Mount Bischoff, Mount Zeehan, Mount Dundas, Mount Lyell, Heazlewood, Beaconsfield, these are often highly charged with valuable metals such as gold, tin, silver, lead, antimony, bismuth, &c. The limestones of the Gordon, and the sandstones of Queen River, Mount Lyell, Honeysuckle Hill, and Heazlewood are rich in fossils. Corals and chambered shells of the *Orthoceras* type characterise the limestones; and the sandstones are replete with casts of comparatively small or minute Brachiopods of the genera *Pentamerus*, *Rhynchonella*, *Orthis*, *Atrypa*, *Strophomena*, and *Spirifer*. The absence of large-winged Spirifers is the most conspicuous feature which distinguishes these sandstones from those of *Upper Palæozoic* age. These older rocks are also exposed in the neighbourhood of Mount Roland, Chudleigh, and Mersey River, and they are to be traced forming a marginal boundary in the east through Freycinet Peninsula and Schouten and Maria Islands. Granites and porphyries are commonly associated with them in various localities, as at Gladstone, Blue Tier, Fingal, Avoca, Schouten and Maria Islands, Mount Heemskirk, Mount Bischoff, Housetop, Meredith Range, and elsewhere, in all of which places valuable metals occur more or less richly.

Intrusive Greenstones.

Towards the centre of the Island the sedimentary rocks are overlaid by the massive greenstone plateau of the Lake Country. Mountain chains, isolated bosses, and minor ridges of greenstone ramify the remaining part of the south and eastern portion of the Island, breaking up the stratified rocks of Upper Palæozoic and Mesozoic age into many isolated basins. Generally, the stratified rocks of Carboniferous and Mesozoic age are in this region so intimately associated with the older and newer diabasic greenstones, that the latter cannot very well be considered apart in any attempt to describe them. The diabasic green-

stones form the elevated plateaux and mountains, as well as the minor dividing ranges throughout a great part of the midland, northern, eastern, and south-eastern parts of the Island; and comparatively, if not wholly, they may be said to be absent from the extreme western part, where the older Silurian and metamorphic rocks prevail, with their associated granites and porphyries.

The great central greenstone plateau of the Lake Country, in its northern part especially, preserves a general rugged or undulating level of about 4000 feet altitude, and its higher bosses and peaks and its valleys do not vary much more than 1000 feet above or below this uniform level. From the Picton to Gad's Hill, a distance northerly of over 100 miles, its westerly limit may be traced, forming a bold and widely undulating margin relative to the western country, whose immediate general upland surface ranges between 2000 and 3000 feet above sea level. This margin is markedly broken by the elevated outlying spur forming the Eldon Range, near Lake St. Clair. From Gad's Hill in a south-easterly direction to the Table Mountain, a distance of not less than 90 miles, its similarly indented margin presents a still bolder character as it approaches and contrasts with the lower fertile plains and valleys of the Meander and South Esk, which seldom exceed an altitude of from 600 to 700 feet above sea level. At the great northern and southern water divide in the neighbourhood of Table Mountain it suddenly recedes and contracts, forming a large bight in the direction of the Upper Derwent tributaries, notably the Rivers Nive and Ouse, from which point its level tends to fall, and its marginal boundaries, though frequently rising into high mountain ridges towards Mount Wellington, no longer maintains the uniform boldness of outline which characterises its northern aspect.

With the exception of Ben Lomond, which attains an altitude of 5010 feet, the remaining isolated or ramifying greenstone dividing ranges, so largely distributed throughout the basin of the Tamar, Derwent, and Coal River, and along the broken or deeply indented coast line of the East, are tame in character compared with the elevated far-extending tiers of the Great Central Plateau.

Nearly everywhere along and against this plateau and the greenstone crests of Ben Lomond, Mount Dromedary, Mount Nicholas, Fingal Tier, Eldon Range, Mount Gell, Grass-tree Hill, Constitution Hill, and most of the more elevated south-eastern dividing ranges, the various members of the Carboniferous and overlying Mesozoic rocks are seen to repose invariably almost in a horizontal position, or at most with a very slight dip towards or away from them. It would seem probable that the greater masses of the greenstone rocks were erupted prior to the deposition even of the lower members of the Carboniferous mudstones and limestones, and at a time when, from secular causes, the older rocks of the south-eastern and central parts of the Island, after long subaerial exposure, were slowly being submerged below the level of the ancient Upper Palæozoic sea. The minor greenstone ridges, like those at Spring Hill and Domain, Hobart, undoubtedly represent greenstones of a later date. There is little difficulty in distinguishing these Upper Palæozoic and Mesozoic greenstones from the numerous and extensive sheets of basalt which, with their associated tuffs, so frequently

overspread the Tertiary lignites, clays, and leaf-beds, and which probably mark the close of the Tertiary Palæogene period in Tasmania.

Upper Palæozoic.

Carboniferous Sedimentary Rocks.

The characteristic rocks of the Carboniferous system in Tasmania chiefly consist of thin regular bands of siliceous conglomerates and grits, blue slaty shales, limestones, argillo-calcareous and argillo-arenaceous rock of a yellow or whitish appearance, with intercalated bands near its uppermost limits, composed of white, red, and yellow sandstones, fine greyish laminated shales, bituminous shales, and occasionally thin coal seams.

The members are for the most part extremely rich in fossils, and are more or less horizontally disposed, although greatly dislocated by intrusions of greenstone and secular upheaval, and subsequently subjected to a long-continued denudation. The varying altitudes (sea level to 2500 feet) at which apparently the same members are found, together with the deep valleys of erosion so common throughout the country, testify to the vastness of the dynamical agencies which have operated upon them since their deposition.

In the Basin of the Mersey there is evidence of a temporary local elevation and subsequent depression of the floor of an old arm of the Upper Palæozoic sea, between which elevation and depression sedimentary deposits of carbonaceous matter of considerable thickness were formed, derived from a luxuriant land vegetation consisting largely of club mosses, from which spore cases (*Tasmanites punctatus*) were derived, also net-veined ferns of a peculiar type, represented by the genera *Glossopteris* and *Gangamopteris*, with which are associated numerous spathulate leaves of a plant named *Nœggerathiopsis*, supposed to be allied to the conifers. The fossils of the marine beds are very numerous, but the characteristic forms, consisting of large-winged *Spirifers* and lace-like *Fenestellæ*, enable anyone to easily identify the rocks in which they are found. The various beds of the system are well represented in the neighbourhood of Hobart, especially so in the cutting of the Huon Road towards the *Fern-tree Inn*.

Mesozoic Period.

The rocks of Mesozoic age in Tasmania consist mainly of variegated sandstones, regularly or falsely bedded shales, blue and white clays often of great thickness, and extending throughout the midland, southern, and south-eastern districts. They frequently contain seams of coal, sometimes, as in the Fingal, Seymour, Douglas River, and Sandfly distracts, of considerable thickness and of fair quality. The beds of the system are distributed in distinct basins, often greatly disturbed and broken up by intrusive dykes of greenstone, and on this account, and because of the great sameness of fossil plant remains, there is great difficulty in attempting to break up the beds of the system into subdivisions. The beds, as a whole, probably cover the whole period from the close of the Upper Palæozoic Coal Measures to the beginning of

the Tertiary period. No marine deposits break the sequence of the upper division, as in Queensland and New South Wales. The great lignite and leaf-bed series (Palæogene), with leaves of the oak, elm, laurel, beech, cinnamon, and other trees, generally overlie the Mesozoic members in the Launceston Tertiary Basin. Two great divisions, however, may be determined between which there is a very remarkable stratigraphical and palæontological break.

The Upper Division (Coal Measures) is wholly terrestrial and lacustrine, and includes the various coal measure basins of the Derwent, Jerusalem, York Plains, Fingal, Longford, Hamilton, Spring Bay, Prosser's River, Sandfly, New Town, Compton, Impression Bay, Whale Head, &c. The remains of the following plants are very abundant, viz. :—Ferns—*Tæniopteris*, *Danæa*, *Sagenopteris*, *Rhacophyllum*, *Neuropteris*, *Alethopteris*, *Thinnfeldia*, *Odontopteris*, *Sphenopteris*, *Trichomanides*, *Cyclopteris;* Cycads—*Podozamites*, *Pterophyllum*, *Sphenozamites;* Club Mosses—*Phyllotheca;* Conifers—*Baiera*, *Salisburia*, *Ginkgophyllum*, *Zeugophyllites*, &c.

The thickness of the series at Harefield, Fingal, has been estimated to be about 300 feet.

The Lower Division (Older Sandstone formation) consists of a series of reddish or yellow micaceous sandstones, sometimes of great thickness. The beds often overlie the uppermost members of Upper Palæozoic age, sometimes apparently conformable with them, as at Tinder Box Bay. At other times they are found alternating with the rocks of older formation at lines of fault, as at Waterworks Valley, Cascades, and Knocklofty. It is possible that there may be two distinct groups within the Lower Division, the older related more closely perhaps to the Carboniferous rocks, and the newer to the older Mesozoic period.

Remains of plants (*Vertebraria*) have been found at the Cascades, and recently the sandstones of Knocklofty and Tinder Box Bay have yielded the very perfect remains of fossil fishes (*Acrolepis Hamiltoni*, *A. Tasmanica*) of the Ganoid family, closely allied to *Myriolepis Clarkei*, occurring in New South Wales in the Hawkesbury series, which formation is deemed by New South Wales geologists to belong to Triassic age.

In the Jerusalem Basin, near Campania, similar sandstones occur, intimately associated with the Mesozoic Coal Measures, from which a *strobilus* or cone of a species of *Lepidostrobus* (*L. Muelleri*—Johnston) was obtained. No coal seams are known to occur in these sandstones. From the occurrence of fish remains, it is not improbable that some of these sandstones may belong to the shallow shore margin of an ancient arm of the sea, although it must be admitted that the Ganoids of the period are more commonly found in the sediments of ancient freshwater lakes or inland seas.

Cainozoic.

Tertiary System.

Taken as a whole, the general features of the Tertiary system in Tasmania correspond exactly with those of the mainland of Australia.

The rock formations may be conveniently divided into four main groups, in descending order as follows :—

NEOGENE ...	Older raised terrace drifts, often overlying the plateaux of basalt.
PALÆOGENE	1. Basaltic sheets and associated tuffs overspreading marine and lacustrine formations. 2. Lacustrine deposits of great thickness and extent, composed of sands, clays, lignites, travertines, and sometimes including auriferous and stanniferous drifts; contains the remains of a rich and varied flora. 3. Marine deposits in the northern part of Tasmania.

Palæogene Epoch (Middle and Lower Tertiary).

Marine Formations.—The marine formations occur in isolated patches fringing the northern coast of Tasmania and the islands of Bass Strait, notably near Cape Grim, Sandy Cove—Table Cape, and Heathy Valley—Flinders Island. The members present a somewhat uniform character, like their equivalents along the Lower Murray in Australia; and most probably they form the southern limits of the ancient Tertiary sea which occupied the greater part of the existing plains bordering the Great Australian Bight and extending over the lower levels of the southerly portions of South Australia and Victoria.

The rocks generally are composed of alternating bands of shelly limestones, calcareous sandstones, coral rag, ferruginous, gritty, and pebbly bands, replete with fossil shells, corals, foraminifers, echinoderms, sharks' teeth, &c. Certain thin zones of a hard calcareous character recur, invariably showing similar characteristic fossils, notably *Cellepora Gambierensis*, *Lovenia Forbesi*, *Waldheimia grandis*, *W. Garribaldiana*, *Rhynchonella squamosa*, &c. The sandstones are also replete with fossils in the upper beds, of which the following are typical; viz.—*Turritella Warburtonii*, *Panopea Agnewi*, *Voluta Tatei*, *V. Hannafordi*, *V. Weldii*, *V. anticingulata*, *Cypræa Archeri*, *C. platypyga*, &c. In the sandstones of the Upper or "Turritella zone" at Table Cape, land plants occur intermixed with the marine shells, among which may be noted a species of fern (*Pteris Belli*—Johnston) and (*Sapotacites oligoneuris*—Ettings.) The latter form has also been found in lacustrine formations at Macquarie Harbour and Hobart. The lowermost bed at Table Cape is almost wholly composed of the remains of a large bivalve (*Crassatella oblonga*), and rests upon the upturned edges of slates belonging to Silurian age. At Cape Grim and Table Cape the whole series are capped with bosses of nepheline basalt, similar to the older basalts of Victoria, and to the plateaux of basalt abounding throughout the Island, invariably covering ancient lacustrine deposits with their lignites and leaf-beds. Nowhere along the Tasmanian coast does the marine group exceed 70 feet in thickness. From the character of the molluscs and the small percentage of species having living representatives (not exceeding 2 per cent), it is clear that these marine beds of Tasmania must be placed at the base of the Palæogene group, *i.e.*, equivalent to the early Eocene of other countries.

Lacustrine Formations.—The more important lacustrine formations, as might be expected, are mainly found in the original valleys and

eroded basins of the earlier rocks, and generally consist of regular or irregular bands of white, grey, or ferruginous sandstones, alternating with grits; blue, white, yellow, or blackish clays; lignites; and sometimes in the neighbourhood of the older slates and crystalline rocks the ancient channels formed in them contain drifts of a richly auriferous or stanniferous character. Many of the formations are found along the course of existing rivers and watercourses in the form of raised bordering terraces. In other places, as in the Launceston Tertiary Basin, they occupy the floor of broad undulating plains, covering an area of not less than 600 square miles, and ranging from 400 to 1000 feet in thickness. Being comparatively of a loose and incoherent nature, the beds are unable to resist the eroding influences of air and water, and are therefore greatly denuded along the course of existing rivers and their tributaries. The extent of this denudation is well exemplified along the lower course of the North Esk, in the neighbourhood of Breadalbane, St. Leonard's, and Launceston. In this vicinity it is estimated that strata from 15 to 20 miles long by 1 to 1½ miles broad have been denuded to a depth of from 50 to 500 feet. These lacustrine deposits are found throughout the Island from sea level to an altitude of 4000 feet above it; sometimes, as at Magnet Range, Mount Bischoff, Branxholm, and Ringarooma, concealing and composed of the waste of the oldest or pre-Archæan rocks, with associated stanniferous granites and porphyries; again, as at Macquarie Harbour, Beaconsfield, Lefroy, Back Creek, Tullochgorum, Mangana, and Black Boy, bordering and concealing the Silurian slates with quartz dykes and veins, from the destruction of which they have derived their auriferous drifts. At Geilston, Cornelian Bay, Glenora, Hobart, Sandy Bay, and Onetree Point they are associated with the Upper Palæozoic mudstones and intrusive greenstones; while at Launceston, Glenora, Hamilton, Ross, Jerusalem, and Longford they are mainly derived from the associated or underlying sandstones, clays, shales, and carbonaceous formations of Mesozoic age. In each case, notwithstanding the similarity or identity of fossil plants common to them all, the nature of the latter rocks shows that the mineral characteristics of each basin vary in correspondence with the rocks with which they are now immediately associated, and from the waste of which, in the main, they originally derived their sands, clays, grits, and gravels.

The clays and ferruginous sandstones are in most places replete with the remains of a luxuriant vegetation, among which the leaf impressions of forms more allied to the existing European flora are especially noticeable—such as those belonging to certain extinct species of the oak, elm, beech, laurel, willow, and elder. With these occur ancestral forms of Banksia, lomatia, eucalyptus, pittosporum, cinnamon, fig, araucaria, and other conifers.

It is of special interest to note that the ancestral forms of the existing floras of the world had already attained a very high state of development and specialization into well-known generic types, which were then world-wide in distribution, and not, as at present, restricted to particular widely separated regions. Dr. von Ettingshausen and Baron von Mueller have recently shed great light on this important branch of palæontology.

There is good reason for believing that the climate of the Palæogene period varied from sub-tropical to temperate between the close of the Mesozoic and the commencement of the Upper Tertiary formation or Neogene epoch.

Neogene Epoch (Upper Tertiary).

Upper Tertiary.—In Tasmania a series of deposits occur, generally resting either upon the Palæogene basalts or the lacustrine or marine beds. These deposits consist mainly of clays of various shades of colour; sands, coarse and fine; ferruginous sands; and, more conspicuously, of gravels and pebbles frequently conglomerated, among which, in many localities—as at Longford—occur a wonderful abundance of waterworn pebbles, derived from the silicified stems and branches of conifers and other fossil trees. The apparent absence of marine formations, and of the newer basalts found so common in Victoria, render it difficult to mark the upper limits of this division with any degree of satisfaction.

The absence of fossils, other than those derived from the lower rocks, also deprives the classifier of the most reliable guidance in such matters. There is little doubt, however, so far as Tasmania is concerned, that there is represented a perfect continuity of land and freshwater deposits from the Mesozoic period to the present time. As we cannot, therefore, look for any limit corresponding to a complete break in the stratigraphic series, and as no contemporaneous fossils have yet been found, the evidence as to the age of the group is limited to their mineral contents, altitude, correlation, and particularly to the earlier signs of successive planes of the erosion of existing lake-basins, ancient and recent valleys and watercourses (500 to 700 feet above existing channels) throughout the Island.

Among the more important of these deposits may be noted the gravelly and gritty accumulations forming the older terraces overlying the Archæan and Silurian formation of the western and north-eastern parts of Tasmania, and especially the older gravel drift terraces of the 600 to 700 feet level forming the upper zone of the Launceston Tertiary Basin, occupying nearly the whole of the rolling plains drained by the Tamar and its important tributaries. Fine sections of these older Neogene drifts are to be seen in the neighbourhood of Breadalbane, Perth, and Longford, where they succeed the uppermost members of the lignites, clays, leaf-beds, or basaltic sheets of the preceding Palæogene epoch. Drift formations of this period, often of great thickness, fringe the shores of Macquarie Harbour, and also are found in the neighbourhood of Port Davey, Pieman River, and Long Plains. Between the Arthur Ranges and the parallel channel of the Upper Huon, similar elevated terraces, with deeply-cut cross valleys, eroded by old or existing water channels, afford evidence of the great extent of formations accumulated during the period, and of the vast amount of denudation which has taken place subsequently. The valley of the Derwent also affords abundant evidence of the same kind. Similar deposits exist in Victoria, South Australia, and New South Wales, and the same difficulties in respect of classification are there also experienced.

There is good reason for the belief that the paucity of life and the enormous denudation are in a large measure due to a growing refrigeration of the climate, and to a much greater rainfall than at present. Whether this supposed change in the direction of a colder climate became sufficiently intense within the period to produce the local ice-sheets and glaciers—of which there is evidence in valleys of the Western Highlands, notably along the deeply-cut ravines of the Mackintosh River—it is difficult to determine. It is quite conceivable, however, that simultaneously with the rising of the floor of the old Palæogene sea the adjacent land partook of a corresponding elevation, and we may therefore expect to find, as a direct consequence, a considerable change of temperature over the limits of the higher areas thus affected. In the lower levels there is no evidence of glaciation corresponding to the boulder drifts of Europe in the Pleistocene period.

Post-Tertiary, or Quaternary Period.

The nature of the Post-Tertiary rock formations and of their principal divisions may be ascertained from the following brief summary, arranged in descending order :—

Recent, or Human Period	1. Alluvium of recent rivers, lagoons, lakes, and seas, &c. ; peat ; unconsolidated blown sands along the coasts ; native shell-beds, with burnt embers and artificial flints, belonging to the now extinct Tasmanian race, along the coasts, as around the Derwent and Tamar estuaries ; talus drifts on slopes and at base of mountains and cliffs, &c. 2. Consolidated sand-dunes—*e.g.*, Helicidæ sandstone, Flinders' Island—associated with and including the raised beach terraces on Flinders', Barren, Badger, King, Kent, and along certain parts of the northern coast. The only known example of consolidated sand-dunes and recent raised sea beaches in the south of Tasmania occurs in one of the minor bays inside the heads at Blackman's Bay, on Forestier's Peninsula. These older sand-dunes frequently contain in abundance the fragmentary remains of marine shells, but more abundantly the well-preserved remains of land shells still found living near the shore ; viz.—*Helix Barrenensis*, *H. Furneaux-ensis*, *H. pictilis*, *H. Bassi*, *H. Simsoniana*,* &c. In the consolidated beds of ancient lagoons, in hollows of *Helicidæ* sandstone, occurs *Bithynella nitida*, together with *Lymnea Huonensis*, *Physa eburnea*, *P. Tasmanica*, and *P. mamillata*.
Pleistocene Period	1. Cave deposits, with bone-breccia underlying stalagmitic floor, as at Chudleigh, from which bones of the following animals† (still living) were obtained ; viz.—*Halmaturus Bennetti*, *H. Billardieri*, *Bettongia cuniculus*, *Potorous marinus*, *Phascolomys wombat*, *Phalangista vulpina*, *P. Cooki*, *P. fuliginosa*.

* Extinct.

† The remains of the extinct giant marsupials, such as *Diprotodon*, *Nototherium*, and *Thylacoleo*, found in such abundance in similar deposits in Australia, have not yet been discovered in the Pleistocene or later deposits of Tasmania.

Pleistocene Period	2. Esker drifts, as at Pig Island, Newnham, Stevenson's Bend, and Invermay, on the Tamar, consisting of irregular beds of waterworn pebbles; pebbles of silicified and ferruginous fossil pine and other woods, including fossiliferous fragments of Palæogene leaf-beds, &c.
	3. Lower terrace drifts, belonging to the later pluvial period, at successive levels in the main valleys of the North Esk and other rivers.

Generally, it may be stated there is little evidence of physical disturbances of an extraordinary character during the Quaternary period, if we except the minor local oscillations of land indicated by the raised sea beaches on the islands of Bass Strait, and on other places along the northern coast line of Tasmania.

Volcanic forces seem to have been comparatively in repose since the cessation of the wide-spread eruptions of basalt and associated ejectamenta at the close of the Palæogene epoch.

The characteristic formations of gravel drifts, sand-dunes, shingle-beaches, lake-silts belong to the softer rocks; and being deposited in the lower levels or in depressions of the harder and more ancient rocks, they do not form prominent features in the general land-sculpture Indeed, it may generally be affirmed that the leading features—the mountain chains and ridges, the main valleys and their river courses, the great plains and plateaux—were all established prior to the deposit of the members of the Post-Tertiary age. The almost complete destruction of the marine beds of the Palæogene period—of which the fragment at Table Cape and elsewhere alone remains, and which, after having been elevated, must have formed a connecting link with the mainland of Australia—opening afresh the Bass Strait, must have been effected during the Neogene and early Pleistocene periods, and prior to the oscillation of land which produced the raised beaches found on all the existing islands of the Straits. So far as the life of the raised beaches are concerned, it has been observed that nearly all the species seem to be identical with forms now living in the adjacent seas.

Industrial Products.

Industrial Products of the Archæan System.

In the veins, elvans, lodes, or dykes traversing the rocks of Archæan age in Tasmania, or in the drifts immediately derived from their waste, are to be found many minerals and metals of great economic value, the most important of which are tin, copper, bismuth, zinc, cobalt, iron, and, not unfrequently, silver and gold.

The dense crystalline limestones of the system yield valuable marbles; the characteristic serpentines, from the beauty of their texture, may utilised in the manufacture of ornamental vessels and other articles, and for purposes of internal decoration; while the fibrous asbestos and the fire-resisting steatite, associated with the serpentine, may be turned to many important uses in connection with gas grates, packing for steam engines, lamp wicks, furnaces, &c. As in the Archæan rocks of Tasmania the development of iron and tin is of

remarkable magnitude, it may be of advantage in this place to enter more fully into particulars connected with their characters, distribution, and probable extent.

Iron.

In Tasmania, in various localities, vast masses of hematite* and magnetite occur, associated with serpentine, as in the Archæan rocks of Canada. Although these important deposits in Tasmania are in most cases greatly concealed by vegetation or superficial drifts, the exposed portions in various localities—such as Cabbage-tree Hill, Ilfracombe, Marsden's Hill, York Rivulet, Penguin Creek, Mount Donaldson, and Mount Heemskirk—are sufficient to impress anyone with their magnitude. Mr. Charles Gould, in his Report on the River Forth and North Coast (1867), states that "brown hematite occurs at many points, either alone or in combination with manganese. It occurs abundantly at a point situate on the east side of Penguin Creek. On the higher ground the ore is pure, and associated with manganese; it juts out from the ground in great masses, which terminate westward in cliffs, presenting a face of some hundreds of feet in depth, and fronting on a tributary of Penguin Creek. Throughout the whole of this thickness there is a large proportion of iron ore, and the number of tons above the water level of iron ore of fair quality must be something far in excess even of the largest estimate made of the available iron ore similarly situated at the lode in the Blue Tier, near the Ilfracombe tramroad."

Mr. Gould only refers particularly to the more conspicuous places, for he declares that a special survey, not yet undertaken, is necessary before anything like an approximate estimate can be made of all the brown hematite in the Forth and Penguin districts. He also refers to a massive red hematite lode of the purest quality, many feet in width, occurring at Marsden's Hill.

Mr. John Brown, surveyor, also has given an interesting account of the vast extent of similar masses which appear to intrude through and spread over the serpentine rock on the property of the late R. De Little and W. Barnes, in the Ilfracombe district.

No mention is made of the presence of chromium in the deposits about Ilfracombe, which unfortunately, from its refractory nature, caused the failure in working the magnificent deposits near York Town by the Tasmanian Charcoal Iron Company. These iron deposits were graphically described, and their position carefully mapped, in a report of the country near Ilfracombe, in the West Tamar district, and printed as a Parliamentary Paper (No. 76) in the year 1866. A special paper has been prepared by Mr. T. C. Just (*see Appendix to this work*), giving a very complete account of the attempts made by English experts and manufacturers to utilise the chromic pig-iron in the manufacture of rails, steel, and steel tools.

Mr. Gould states that, unlike other iron ores abundant elsewhere throughout Tasmania, these appear to be contained in real mineral lodes, or to be derived from the contents of such, and their formation

* See Dana's definition, p. 455, Manual of Mineralogy and Lithology.

appears to have been determined by a mineral force acting in different directions. Four varieties are enumerated; viz.—

1. Earthen brown hematite.
2. Crystal brown hematite.
3. Magnetic oxide.
4. Earthy red hematite, apparently derived from 1, 2, and 3.

The deposits which present more clearly the characteristics of lodes or veins are—

1. Hematite deposit of great magnitude, situated about seven miles from the beach, along the old tramway.
2. Deposit of hematite of a similar character, though less extensive, situated at the end of the old tramway, and about a distance of ten miles from the shipping-place.

The ores are in some places compact and massive, and elsewhere crystalline, in reniform and botryoidal masses, with a fibrous and radiated structure. The ore, especially at the first-named place, frequently appears in detached masses of immense size, and probably averages in quality from 55 to 60 per cent. of iron over the greater part of the exposed deposits. A small portion of these deposits along the old Ilfracombe Tramway were worked for some time, but upon too small a scale to command success from an economic point of view.

The second group of deposits described by Mr. Gould in this neighbourhood are appropriately termed "The Ironstone Hills." Of the latter there are three deposits which stand out from the rest in magnitude and importance, although these are again more or less connected by minor deposits, or indications of lodes.

The Ironstone Hills are situated about two miles from the mouth of Anderson's Creek, and are all within the area of serpentine. The hills themselves vary from 100 to 150 feet above the level of the creek, and the country in the immediate neighbourhood is gently undulating.

Mr. Gould further states that the area occupied by the drift of magnetic oxide surrounding these extensive hematite deposits is very great; and on sinking through the superficial drifts "there occur at intervals in regular masses, seldom exceeding a few inches in thickness, a combination of magnetic oxide of iron and an asbestiform mineral which is found traversing the serpentine in short strings." The bedrock associated with these deposits appears to be serpentine. It was in these deposits that the Tasmanian Iron and Charcoal Company carried on operations for a considerable time, and expended a very large sum of money in buildings and furnace, and a properly equipped railway between the shipping-place and the deposits of ore; but, notwithstanding that the works were erected and supervised by a skilled manager from Scotland, the attempt to produce a marketable iron failed, owing to the presence of chromium in a free state—*i.e.*, not a chemical combination—which renders the metal too hard and brittle to be useful. It must be borne in mind, however, that it is only the ore on the property of the company last named which is reported to contain chromium.

The following analyses with respect to some of these iron ores were prepared for the writer by Mr. Woodgate, analyst, in the year 1880:—

ANALYSES of Iron Ore.

	Ilfracombe.			
	No. 1 sample.	No. 2 sample.	No. 3 sample.	1 sample.
Volatile on ignition	11·2	19·5	5·1	12·0
Alumina	2·0	15·3	5·8	2·4
Sulphur	trace only	...	...	...
Phosphorus	trace only	...	...	...
Lime, Magnesia, Alkalies	...	...	...	traces
Manganese	0·5	...	...	0·4
Chromium, Sesquioxide	trace	3·0	3·4	...
Iron { Sesquioxide	79·8	...	...	70·8
Iron { Peroxide	...	42·5	80·0	...
Iron { Protoxide	...	1·0	...	...
Silica	6·1	18·4	4·8	13·8
Undefined	0·4	0·3	0·9	0·6
	100·0	100·0	100·0	100·0

ANALYSES of Metallic Iron reduced from Ilfracombe Ores.

	No. 1 sample.	No. 2 sample.	No. 3 sample.
Iron	89·0	73·3	97·2
Silica	3·2	19·9	0·9
Graphite	0·7	0·8	...
Chromium	5·1	4·6	trace
Sulphur	...	0·2	...
Undefined	2·0	1·2	1·9
	100·0	100·0	100·0

ANALYSES of Slags.

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.
Silica	34·6	28·8	33·5	32·0	26·6
Protoxide of Iron	7·7	3·7	2·5	1·9	1·0
Alumina	24·1	36·2	26·6	32·1	32·2
Lime	27·1	24·8	29·1	26·7	33·2
Magnesia	2·6	3·2	2·1	2·2	2·0
Undefined	3·9	3·3	6·2	5·1	5·0
	100·0	100·0	100·0	100·0	100·0

Tin.

Hitherto it was generally supposed that the tin occurring in such abundance in the drifts in the vicinity of Heemskirk, Mount Bischoff, Branxholm, Blue Tier, Mount Cameron, George's Bay, and the Schoutens was almost invariably derived from quartz or eurite porphyry, which, as dykes, traverse the granite rocks, especially at points of contact with the older slates and metamorphic rocks; but certain tin-bearing porphyries of Mount Bischoff have recently been subjected to rigid analysis by Baron von Groddeck, Director of the Royal Prussian Academy of Mines at Clausthal,* who concludes that the tin matrix examined by him at least is not, as supposed, a quartz-porphyry, but a porphyritic topaz rock. It is also interesting to find, as stated by Baron von Groddeck, that the topaz rock of Auerbach forms at the surface a huge well-like mass, which in itself contains or forms an immense lode of tin ore.

The same accomplished observer has discerned that the light greyish blue masses of minerals associated with the topaz-porphyry, sometimes exhibiting colours of green to black, and upon "slides" exhibiting also a dirty violet nucleus, enveloped by a greenish coating, are undoubtedly tourmaline, which, under the blowpipe, gives distinct reactions of boron and very little of fluorine. These revelations are most interesting; but it is now found that these observations only apply to a small portion of the tin-bearing matrix, eurite-porphyry being the prevailing matrix both at Mount Bischoff and elsewhere. It is significant, however, that stellate masses of tourmaline, of large size, form a conspicuous character in the tin-bearing rocks around Heemskirk, and also at Ben Lomond. The porphyritic topaz rock is stated by Baron von Groddeck to bear a remarkable resemblance to the former, even when examined under a powerful lens. Tin throughout other parts of the globe, as well as in Tasmania, has its home in the granites which are so intimately related with the upper members of the Archæan rocks. This is notably the case in Queensland, New South Wales, Victoria, Tasmania, Banca, Britain, Germany, and France. A reference to the sketch map contained in the author's work on the "Geology of Tasmania" shows the intimate association with the granites in Tasmania. Thus, associated with the granites of north-western Tasmania, tin exists or is worked at Mount Heemskirk, Mount Hicks, Mount Ramsay, Mount Bischoff, Interview River, Meredith Range, and Housetop. Similarly, on the north-east and east tin exists or is worked at Gladstone, Wyniford River, Moorina, Branxholm, Ellesmere, Mount Maurice, Thomas's Plains, Blue Tier, St. Helen's, Cole's Bay, South Freycinet, Schouten Island, Flinders' Island, Clarke's Island. Although tin was reported to have been found in Tasmania long prior to 1871, the reports were so vague that little importance was attached to them. The discovery, in 1871, of the valuable tin deposit at Mount Bischoff, in the north-west—probably the richest tin mine in existence—by Mr. James Smith, however, aroused general attention; for soon after tin in payable quantities was discovered in the north-east by Mr. G. R. Bell, and almost

* See translation by Mr. Thureau, read before the Royal Society of Tasmania. Paper, Royal Society, 1885.

immediately thereafter similar deposits of steam tin were discovered near St. Helen's by Messrs. Wintle and Hunt. Mr. Gould at the same time found traces of tin near Killicrankie, on Flinders' Island, and on Cape Barren Island; and, in 1875, Mr. Sprent discovered tin at Mount Heemskirk. Since that time many valuable deposits have been discovered near the points where the earlier discoveries were made.

The greater part of the tin hitherto exported from Tasmania has been derived from the waste of lodes rather than from the lodes themselves. It must, however, be stated that a considerable portion of the celebrated "Red Face" at Mount Bischoff is supposed by some experienced observers to be simply the remains of a decomposed tin lode, and not alluvial, as in the greater part of the ground worked, which, undoubtedly, like other deposits throughout Tasmania, consists of re-arranged drift derived from the waste of various lodes in the immediate vicinity of the present workings.

It is also evident that the greater portion of the superficial drifts which have yielded the richest tin is of considerable antiquity—at any rate, older than the intrusive tertiary basalts which, in the Branxholm and other districts, are found to be spread out over them. Nearly ten years ago,* the author drew attention to the probability of finding tin drift beneath the extensive sheets of basalt in the neighbourhood of the granites, and it is satisfactory to find that this prediction has now proved true, as it opens out a much wider field for prospecting for this valuable metal in the tin-producing districts of the north-east, where the overlying basaltic sheets are often of considerable extent.

Hitherto lodes have been worked only to a very limited extent in the vicinity of Heemskirk, Mount Bischoff, and Ben Lomond; but in the vast extent of country round Ringarooma, Gladstone, and Branxholm, where the alluvial tin is found along the course of streams, in terraces high above the present water-course, and in deposits underlying tertiary basalts, no lodes have as yet been worked. The late Mr. C. Sprent has stated that the "champion lode" of this richly yielding tin district has not yet been discovered, and suggested that both in the north-east and north-west "there is need of systematic testing of the ground at considerable depths below the surface."

The importance of the several districts, so far as the produce of tin is concerned, is best indicated by the yield for the year 1882, taken from statistics specially compiled for that year :—

* See Proceedings, Royal Society of Tasmania, 1879, p, 82.

Tin Mining, 1882.*

Locality.	Number of						Tin Ore produced.			
	Persons employed.			Mines or Claims.			Quantity.			Value.
	Alluvial.	Lode.	Total.	Alluvial.	Lode.	Total.	Alluvial.	Lode.	Total.	
							Tons.	Tons.	Tons.	£
North-Eastern Division—										
Fingal and Avoca	63	60	123	8	7	15	24·80	...	24·80	1581
George's Bay	135	...	135	30	...	30	214·00	...	214·00	13,642
Blue Tier	99	...	99	16	...	16	143·75	...	143·75	9164
Gould's Country	58	...	58	5	...	5	74·15	...	74·15	4727
Thomas's Plains	248	...	248	24	...	24	389·80	...	389·80	24,850
Blue River	68	...	68	6	...	6	27·70	...	27·70	1766
Branxholm	316	...	316	19	...	19	887·65	...	887·65	56,588
Cascades River	72	...	72	4	...	4	152·95	...	152·95	9750
Moorina	250	...	250	18	...	18	306·65	...	306·65	19,549
Mount Cameron	289	...	289	37	...	37	351·65	...	351·65	22,418
Mount Horror	8	...	8	2	...	2	1·15	...	1·15	73
Ringarooma	50	...	50	8	...	8	82·05	...	82·05	5231
Total North-Eastern Division	1656	60	1716	177	7	184	2656·30	...	2656·30	169,339
North-Western Division—										
Mount Bischoff	329	131	460	4	3	7	2648·00	261·40	2909·40	185,474
South-Eastern Division—										
Schouten Main	4	...	4	2	...	2	4·15	...	4·15	265
West and South-Western Division—										
Mount Heemskirk and Mount Agnew	33	98	131	4	12	16	21·65	4·00	26·65	1635
Grand Total	2022	289	2311	187	22	209	5330·10	265·40	5595·50	356,713

* This year is specially selected, as it shows the results of the several districts in greater detail.

The Mount Bischoff Tin Mining Company alone produces about half the total yield for Tasmania. During the working season this mine produces about 250 tons of dressed ore per month.

The number of claims worked and the number of men employed upon them for the years 1887-8-9, are summarised in the following Abstract:—

TIN Claims worked, 1887-8-9.

		1887.	1888.	1889.
Persons employed	No.	2262	1912	2227
Mines or Claims	No.	311	176	82
Tin Ore produced — Tons	No.	5702	5245	5550
Tin Ore produced — Value	£	585,808	351,473	317,144
Tin Ore produced — Value per man	£	258·97	183·82	142·41

	Per cent.
Average per cent. of assay of dressed tin ore	72·00
Average yield at smelting works	70·21
Mean assay of Mount Bischoff metallic tin	99·87

Although tin was discovered in 1871, it was not until the year 1873 that it began to appear as an article of export. Since that time it has become one of the principal articles of exports.

TIN Exported from Tasmania, 1873-89.

	Slag.	Ore.	Metal.	Value.
	Tons	Tons	Tons	£
1873	...	4	...	220
1874	...	142	...	7318
1875	...	...	366	31,325
1876	...	544	1072	99,605
1877	...	3526	2221	296,941
1878	110	1691	4146	316,311
1879	172	75	4316	303,203
1880	...	3	3951	341,736
1881	...	4	4120	375,775
1882	...	81	3589	361,046
1883	...	77	4045	376,446
1884	...	32	3675	301,423
1885	...	...	4242	357,587
1886	...	...	3776	363,364
1887	...	...	3606	407,857
1888	...	...	3775	426,326
1889	...	31	3764	345,407
Total	282	6210	50,664	4,711,890

The yield of metallic tin up to the present time would represent a column as high as Mount Wellington (4166 feet), and nearly 8 feet square; and its extraction would involve the displacement of at least 10½ millions cubic feet of tin drift.

Tin Produce, 1881–1885.

000's omitted.

Exported

From	1881.	1882.	1883.	1884.	1885.	Total.
	£	£	£	£	£	£
Straits Settlements	835	1347	1310	1202	1314	6010
Australasia—						
New South Wales.....	943	1061	1060	748	697	4511
Tasmania	375	361	376	301	357	1772
Queensland.....	165	269	298	228	156	1119
Total Australasia	1483	1691	1734	1277	1210	7402
Grand Total	2318	3038	3044	2479	2524	13,412

Imported into the United Kingdom.

Shipped from	1881.	1882.	1883.	1884.	1885.	Total.
	£	£	£	£	£	£
Straits Settlements	835	1347	1310	1202	1314	6010
Australasia and other countries.....	1038	1191	1132	921	867	5151
Total	1873	2538	2442	2123	2181	11,161

The greater portion of the tin produced in Queensland and Tasmania is usually returned as the produce of New South Wales, owing to the circumstance that the former colonies ship the greater part of their tin products direct to New South Wales, from whence they are re-shipped to England along with the tin actually produced in that colony. This has the effect of exaggerating the actual yield of tin of New South Wales on the one hand, and of relatively diminishing the importance of the tin produced in Tasmania and Queensland. This is proved by the following table of imports into the United Kingdom during the year 1885 :—

Imports of Tin into the United Kingdom in the Year 1885.

Shipped direct from	£
Straits Settlements	1,344,340
Australasia—	
New South Wales.....	659,454
Tasmania	24,297
Queensland	27,925
Other Australian Ports ...	34,893
All other countries	90,982
Total Imports	2,181,891

Sources of production.	£	Per cent. to total.
Straits Settlements..	1,344,340	61·59
Australasia—		
New South Wales	232,205	10·63
Tasmania	357,587	16·41
Queensland	156,777	7·20
All other countries..	90,982	4·17
Total	2,181,891	100·00

Of the £20,263,000 value of tin imported into the United Kingdom during the ten years ending 1887, Tasmania produced £3,504,748 or 17·30 per cent. It would thus appear that the tin produce of

Tasmania represents fully one-sixth of the total value of tin imported into England. She therefore stands next to Straits Settlements as the most important tin-producing country of the world.

The mining industry in Tasmania is yet in its infancy, and it is probable that this form of export will be largely increased in the future; for it is known there are extensive fields of a promising character in the north-eastern and western parts of the Island, besides the very large extent of unexplored country occupied by rocks of Archæan age.

The following analyses of dressed tin ores from various parts of Tasmania, taken from samples assayed at one time by Mr. Latta, of the Sydney Smelting Works, Launceston, and from assays made by Mr. Woodgate, of the Mount Bischoff Tin Mining Company's Works, show their general quality :—

NORTH-EAST—			
Branxholm—Arba Company	Assay	71·5	per cent.
,, A.J.J.	,,	73·6	,,
Ringarooma—Weld Company, Cascade River	,,	71·0	,,
,, Krushka Brothers' Home	,,	74·0	,,
,, Black Boy Company	,,	73·0	,,
Mount Cameron—J.R.C. Company	,,	73·5	,,*
Thomas's Plains—Union Company	,,	74·2	,,
George's Bay—D.B. Company	,,	73·0	,,
,, Blue River Company	,,	73·2	,,
,, Pearce's, Ruby Flat	,,	71·7	,,
WEST—			
Mount Heemskirk—Cumberland Company	,,	71·0	,,
NORTH-WEST—			
Mount Bischoff Tin Mining Company (dressed)	,,	72·0	,,

Industrial Products of the Cambrian System.

Gold, tin, and other valuable metals often occur in the veins and lodes of the Cambrian System. Its members yield slates of unrivalled excellence. It is difficult at present to determine to what extent we owe to this system some of the valuable metals. Although the principal gold reefs in Tasmania occur in the Silurian rocks, it is probable that much of the alluvial gold has been derived from veins penetrating the Cambrian System. It is also not quite certain whether some of our tin lodes do not occur in the rocks of this age. Taken as a whole, the system throughout the world vies with the Archæan and Silurian in its yield of the more precious metals. It is true, as a rule, that the regions where the members of the system occur are rugged, barren, and inhospitable; but their richness as regards the precious metals compensate for their lack of fertility so far as agricultural and pastoral purposes are concerned. Land vegetation had not yet made its appearance, and consequently there is an almost total absence of products allied to the coal of later systems. Limestones of excellent quality, however, are very abundant, and if the classification of the Chudleigh and Ilfracombe limestones and their equivalents elsewhere be correct, the system in Tasmania is particularly rich in this useful mineral. These limestones are worked to a considerable extent at the Don and Ilfracombe.

* This ore contains gold.

The following analysis of the limestone of this system occurring at Chudleigh was kindly prepared by Mr. W. F. Ward, Government Analyst :—

ANALYSIS of Chudleigh Limestones.

Carbonate of lime	91·5
Carbonate of magnesia	1·2
Carbonate of iron	1·5
Insoluble residue (sand, &c.)	5·0
Organic matter, &c.	0·8
	100·0

Industrial Products of the Silurian System.

The rocks of the Silurian System are rich in industrial products. In some places *roofing slates* are worked, although, owing to being softer and more pervious to water, they rarely equal the slates obtained in much greater abundance in the more highly metamorphosed rocks of the Archæan and Cambrian System. It is probable that our existing Tasmanian slate quarries are in members of the Silurian rocks, and this may account for the varying character of the beds of slate where they had been worked in the vicinity of the Piper River. There is much probability that good roofing slates will yet be discovered in the Archæan rocks of western Tasmania. *Limestones* of excellent quality in Silurian rocks are of common occurrence, and in most countries such limestones are quarried and burnt for mortar, cement, and manure. *Flagstones* and *freestones* of inferior quality are also obtained. It is in *metals*, however, that the system is particularly rich. These generally occur in veins which traverse the members of the system in every direction, particularly in the vicinity of the axes of their folded and denuded anticlinals. Among these metals may be mentioned ores of *mercury*, *copper*, *lead*, *silver*, and *gold*. The latter has its home *par excellence* in the quartz dykes or "reefs" and veins of the Cambrian and Silurian Systems, although it is also obtained in more limited quantities in a similar manner in the Archæan and Devonian Systems, and in the granites and porphyries which are associated with them. As the gold industry in Australia and Tasmania is of great importance, it may be interesting to devote a small space for the purpose of describing more particularly the history and mode of occurrence of this valuable metal.

Gold.

Gold is classed with silver, platinum, iridium, and palladium as one of the noble metals, and is widely distributed throughout the world, principally in the rocks of Archæan and Cambro-Silurian age. It occurs mostly in a native state, being either pure or only slightly alloyed with one or other of the following metals, viz., silver, tellurium, copper, iron, bismuth, palladium, rhodium. Although gold often richly occurs in the drifts, conglomerates, and igneous rocks of more recent systems,—notably those of Tertiary age,—it is now very generally acknowledged that the gold so found has been derived primarily from the decomposition and waste of the auriferous quartz reefs and veins which occur chiefly in rocks of Silurian and Devonian age. It was from the more recent

auriferous superficial drifts, composed of clay, sand, and gravel, that gold was first derived by man. Reef gold mining, according to Davies, "although the oldest mode of occurrence in nature, is the one more recently known to men, and still more recently worked with success. Excepting some Brazilian mines, and one of doubtful success in the Ural Mountains, there was, only forty years ago, scarcely a gold mine profitably worked in the solid rock."

Important Gold Discoveries in Modern Times.

The following brief summary is confined to the more important discoveries of gold in the great producing centres of modern times. For the facts relating to ex-Australian centres the author is indebted to Davies' useful work, "Metalliferous Minerals and Mining," 8vo., pp. 438; London, 1851.

Russia.—Gold was first discovered in the Ural Mountains in the year 1723, and this region still continues to rank as one of the chief sources of the world's supply of gold.

Austro-Hungary.—Gold has been mined in Hungary since the eighth century. In the existing Amalia mine, near Schemitz, gold is worked to a depth of 1800 feet from the surface.

Central America.—Gold was discovered in Nicaragua in 1850—that is, only a year prior to Hargreaves' discovery of payable gold in Australia. In Brazil gold has been known to Europeans since 1543. The more important mines, still being worked successfully, near St. John del Rey, were first systematically developed by an English Company in the year 1830.

California.—The first important discovery of gold in California was accidentally made in 1847 by Mr. Marshall, at Sutter's Mill, situated on the American Fork, near its junction with the Sacramento. The gold was first discovered as shining yellow particles in a newly formed mill-race in connection with Colonel Sutter's saw-mill.

Australia.—Mining for gold in Australia commenced in the year 1851, immediately upon the discoveries of payable gold-fields by Hargreaves at Ophir in the beginning of the same year. Prior to this date the attention of colonists was not attracted to the subject.

The earliest recorded discovery of gold, however, is that of Mr. Surveyor M'Brian. Of this discovery Mr. Harrie Wood,* gives the following account:—"Mr. Surveyor M'Brian, in his field notes of the survey of the Fish River, between Tarana and O'Connell, states:—'February 15, 1823.—At 81·50 to river, and marked gum-tree. At this place I found numerous particles of gold in the sand in the hills convenient to the river.'"

In 1839, Count Strzelecki, at Boree and Wellington Caves, found gold in specks in silicate, but was induced by the Governor of the colony to refrain from giving publicity to the discovery, as it was feared such knowledge would make it impossible to preserve discipline among the soldiers and prisoners.

In 1841, the Rev. W. B. Clarke discovered gold at the head of

* Mineral Products of New South Wales, 1882, p. 22. See also the *Evening News* of Sydney for 7th August, 1875.

the Winburndale Rivulet, and in the granite westward of the Vale of Clwydd; but although, in 1843, he had mentioned the matter generally, it was regarded as a curiosity only, "and considerations of the penal condition of the Colony kept the subject quiet, as much as the general ignorance of the value of such an indication."*

In 1844 and 1846, without knowing anything of the previous discoveries, Sir R. Murchison published upon scientific grounds a prediction of the existence of gold in Australia. The following account, given by himself, is of much interest to Australians:—"Having recently returned from the auriferous Ural Mountains, I had the advantage of examining the numerous specimens collected by my friend Count Strzelecki along the eastern chain of Australia. Seeing the similarity of the rocks of those two distant countries, I could have little difficulty in drawing a parallel between them, in doing which I was naturally struck by the circumstance that none had *yet* been found in the Australian ridge, which I termed in anticipation the 'Cordillera.' Impressed with the conviction that gold would, sooner or later, be found in the great British colony, I learnt, in 1846, with satisfaction that a specimen of the ore had been discovered. I thereupon encouraged the unemployed miners of Cornwall to emigrate and dig for gold as they dug for tin in the gravel of their own district. *These notices were, as far as I know, the first printed documents relating to Australian gold.*" I have italicised the part which indicates that Sir R. Murchison was not led to make his sagacious predictions because of knowledge of what has since been revealed of earlier discoveries of gold by persons residing in the colony. The following testimony of Count Strzelecki indisputably confirms this view†:—"Nothing can give me greater pleasure and comfort at any time than to bear my humble testimony to the inductive power which you displayed on the occasion of your predictions in regard to the existence of gold in Australia; and, consequently, I can affirm now, as I did, and do whenever necessity occurs, that I never mentioned my discovery or supposed discovery of Australian gold to you prior to your papers on the subject, nor after their publication."

The effect of the discovery of gold in payable quantities in 1851 gave a wonderful impulse to the search for gold in all the colonies, and within a month of the establishment of Victoria as an independent colony it became generally known that rich deposits of gold existed within its borders.

The results of the Select Committee appointed by the Legislative Council of Victoria to consider the order of priority of claims for gold discoveries in Victoria, is thus summarised in Mr. Hayter's Year Book, 1885, p. 24:—

"The Hon. W. Campbell discovered gold in March, 1850, at Clunes; concealed the fact at the time from the apprehension that its announcement might prove injurious to the squatter on whose run the discovery was made, but mentioned it in a letter to a friend on the 10th June, and afterwards on the 5th July, 1851, which friend, at Mr.

* See Rev. W. B. Clarke's evidence before a Select Committee of Leg. Council, N.S.W., Sept., 1852. *Parl. Papers.*

† Presidential Discourse, Trans. Royal Geol. Soc., 1884; also Murchison's Siluria, 1852, pp. 450–451.

Campbell's request, reported the matter to the Gold Discovery Committee on the 5th July. Mr. L. J. Mitchell and six others discovered gold in the Yarra Ranges at Anderson's Creek, which they communicated to the Gold Discovery Committee on the 5th July. Mr. James Esmond, a Californian digger, and three others obtained gold in the quartz rocks of the Pyrenees, and made the discovery public on the 5th July. Dr. George Bruhn, a German physician, found indications of gold in quartz, 'two miles from Parker's station, in April, 1851, and forwarded specimens to the Gold Committee on the 30th June.' Mr. Thomas Hiscock found gold at Buninyong on the 8th August, and communicated the fact to the editor of the *Geelong Advertiser* on the 10th of the same month. This discovery led to that of the Ballarat gold-fields. Mr. C. T. Peters, a hutkeeper at Barker's Creek, and three others, found gold at Specimen Gully on the 20th July; worked secretly to the 1st September; then published the account. This led to the discovery of the numerous gold-fields about Mount Alexander."

In New Zealand, gold was discovered in 1842, less than three years from the foundation of the colony; but it was not practically worked until 1852, *i.e.*, after Hargreaves's discovery in New South Wales. Mining for gold was first commenced at Coromandel, in the district of Cape Colville Peninsula, which, at the present time, forms the chief seat of true mining operations in New Zealand,* and where reefs have been proved to a depth of over 600 feet below sea-level.

In Queensland, the opening of the gold-fields only occurred about the year 1859, or about the time when it was severed as an independent colony from New South Wales.

In Tasmania, the first payable gold was found in 1852, about the Nook, near Fingal, and about the same time it was discovered in minute particles along the Tower Hill Creek and in the vicinity of Nine Mile Springs.† The first quartz mine commenced operations at Fingal in the year 1859. In the same year gold was found in the River Forth by Mr. James Smith, and also good prospects at the Calder, a tributary of the Inglis, by Mr. Peter Lette. At Lefroy (Nine Mile Springs) reef gold was discovered by S. Richards in the year 1869. Traces of gold were also obtained in several places between Hadspen and the Town of Launceston. Gold was also discovered in the western and north-western portions of the island by Messrs. Gould, Jas. Smith, C. P. Sprent, Peter Lette, and S. B. Emmett. The first recorded returns from the Mangana gold-fields date from 1870; Waterhouse, 1871; Hellyer, Denison, and Brandy Creek, in 1872; Lisle, in 1878; Gladstone and Cam, in 1881; Minnow and River Forth, in 1882; Branxholm and Mount Victoria, in 1883; Mount Lyell, in 1886.

Extent of Gold Produce.

The importance of the gold industry in Australasia is best indicated by the fact that 84,039,000 ozs. of gold, valued at £335,770,000, were raised between 1851 and 1888.

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* See New Zealand Hand Book, by James Hector, M.D., C.M.G., F.R.S., 1879.

† Mr. Riva, of Launceston, is stated to have traced gold in slate rocks in the vicinity of Nine Mile Springs about the year 1849.

The proportions yielded by the various colonies are as follows :—

GOLD Produce of Australasia, from 1851 to 1888.

000's omitted.

	1851 to 1860.	1861 to 1870.	1871 to 1880.	1881 to 1888	Total. 1851 to 1888.	Per Cent. to Total.
Quantity.	oz.	oz.	oz.	oz.	oz.	
Victoria	23,932	15,447	10,268	5989	55,636	66·20
New Zealand	36	5507	4010	1870	11,423	13·59
New South Wales	3250	3559	2227	924	9960	11·85
Queensland	4	565	2989	2576	6134	7·30
Tasmania	...	4	180	349	533	·64
South Australia	...	...	85	168	253	·30
West Australia	...	...	...	100	100	·12
Total Quantity	27,222	25,082	19,759	11,976	84,039	100·00
Yearly Average	2722	2508	1976	1497	2271	
Value.	£	£	£	£	£	
Victoria	95,728	61,788	41,072	23,957	222,545	66·28
New Zealand	144	22,028	16,040	7463	45,675	13·60
New South Wales	13,000	14,236	8908	3403	39,547	11·78
Queensland	16	2260	11,956	10,304	24,536	7·31
Tasmania	...	16	720	1319	2055	·61
South Australia	...	...	340	672	1012	·30
West Australia	...	...	...	400	400	·12
Total Value	108,888	100,328	79,036	47,518	335,770	100·00

From this analysis it appears that two-thirds of all the gold raised in Australasia have come from Victoria ; the order of the colonies being as stated so far as the importance of their respective yields are concerned. The yearly average yield of gold during the last seven years is only 1,497,000 ounces, being little more than half the annual average for the last 37 years. The rapid falling off in each successive decade is very striking when compared with the first or maximum period 1851 to 1860. Especially so is this apparent within the decade not yet completed.

The value of gold raised in Australasia during 1887 is estimated at £5,739,288,* and the quantity at 1,434,822 ounces, of which nearly two-thirds were obtained from the reefs or veins in the solid rock.

GOLD PRODUCE OF THE WORLD.

The average gold produce of the world during the last fifty years is variously estimated at between 23½ and 29 millions per year.

According to Mulhall† the gold produce of the world for the fifty years ending 1880 amounted to £1,448,000,000, *i.e.*, equal to an average of £28,960,000 per year.

* Year Book of Victoria, 1887-8, p. 202.

† Dictionary of Statistics, p. 220 ; Victorian Year Book, 1885, p. 384.

Of the total amount for the fifty years, the same authority estimates that the percentages yielded by the principal and other sources of supply were as follow:—

	Per cent.
Mexico and South America	31·5
United States	19·7
Australasia	17·8
Russia	12·0
Other countries	19·0
Total	100·0

The following table, showing the world's produce of gold between the years 1851 and 1885, inclusive, is based upon figures recorded in L. Almanach de Gotha, 1889, with respect to ex-Australian regions, and upon the table prepared by Mr. Hayter in respect of Australasia (Year Book 1887-8, pp. 262-3); the figures in the former being understated so far as Australasia is concerned.

GOLD Produce of the World, 1851 to 1885—Yearly Average.

000's omitted.

	1851 to 1860.	1861 to 1870.	1871 to 1880.	1881 to 1885.	1851 to 1885.	Per cent. to Total.
Quantity.	oz.	oz.	oz.	oz.	oz.	
Australasia	2722	2508	1976	1515	2275	37·1
United States of America...	2667	2294	1984	1546	2123	34·7
Russia	825	870	1660	1111	1117	18·2
Mexico and South America	236	235	230	227	232	3·8
Other countries	277	281	428	527	378	6·2
	6727	6188	6278	4926	6125	100·0
Value.	£	£	£	£	£	
Australasia	10,888	10,032	7904	6060	9100	37·1
United States of America...	10,668	9176	7936	6184	8492	34·7
Russia	3400	3480	6640	4444	4468	18·2
Mexico and South America	944	930	920	908	928	3·8
Other countries	1108	1124	1712	2108	1512	6·2
	26,908	24,752	25,112	19,704	24,480	100·0

From the foregoing table it would appear that the average annual produce of gold during the 35 years ending in 1885 was 6,125,000 ounces; Australasia taking up the premier position with an annual average yield of 2,275,000 ounces, or 37·1 per cent. of the whole world's supply during this period. These results for the later and smaller period altogether reverse the old order of the important producing centres.

Mr. Hayter estimates that the proportion of gold derived from quartz and alluvial in Victoria for the years 1883 and 1884* was—

Quartz, 60 per cent.; Alluvial, 40 per cent.

* Victorian Year Book, 1885, p. 385.

In Tasmania the analysis of the latest statistical records shows that between 1866 and 1889 the total quantity of gold produced from quartz and alluvial was as follows :—

	Ozs.	Value at £4 per oz. £		Per cent.
Quartz	411,959	1,647,836	or	72·89
Alluvial	153,216	612,864	or	27·11
Total	565,175	2,260,700	or	100·00

GOLD Produced in the various Mining Districts of Tasmania between 1866 and 1889.

District.	Gold.			Per cent. to Total.
	Alluvial.	Quartz.	Total.	
	oz.	oz.	oz.	
Beaconsfield	33,506	285,739	319,245	56·48
Lefroy and Back Creek	9293	84,354	93,647	16·57
Lisle	72,760	...	72,760	12·87
Fingal, Mangana, and Mathinna	9091	24,458	33,549	5·94
West Coast	25,407	2070	27,477	4·86
Mount Victoria	...	10,001	10,001	1·77
Denison, Golconda	285	3091	3376	0·60
Other places, including Gladstone, Hellyer, Minnow, Forth, and Cam Rivers, Branxholm, &c.	2874	2246	5120	0·91
	153,216	411,959	565,175	100·00
Per cent. to total	27·11	72·89	100	

GOLD REEFS.

Gold reefs in Tasmania have not yet been worked to any great depth. The following particulars with respect to the principal shafts sunk have been kindly supplied by Mr. F. Belstead, Secretary of Mines :—

District.	Depth of Shaft. Feet.	Direction of Reef.
Lefroy—		
New Native Youth	810	Strike east and west
West New Chum	640	,, east and west 6° S.
Mathinna—		
City of Hobart	650	,, north and south (a little to east of south.)
Beaconsfield—		
Lefroy	400	,, east and west, dipping south.
Tasmania	449	,, ditto.
Florence Nightingale	486	,, ditto.
Dally's United	200	,, ditto.
Moonlight	420	,, ditto.
West Tasmania	420	,, ditto.
Little Wonder	418	,, ditto.

These reefs vary from a few inches to 5 feet in width.*

* The "lode" at Mount Lyell is stated to be over 280 feet thick. It is ferruginous rather than quartziferous in character.

The reefs in New South Wales vary from a few inches to 10 feet in width, and have generally a meridional strike,—although there are exceptions showing a strike N. and S., as at Hill End, Trunkney, and Adelong; at Dalmorta, from E. 10° N. to E. 30° S.; at Grenfell, N.E.; at Temora and Copeland N.E. to E. and S.E.

With respect to Victoria, Mr. W. Nicholas, F.G.S., has furnished valuable information, which is thus summarised by Mr. Brough Smith, F.G.S.*:—

"Of eight hundred and forty-one distinct reefs observed in the Lower Silurian strata, two-thirds have an average direction of strike bearing N. 20° W., and the remaining third an average direction bearing N. 11° E.: and that of one hundred and fifty-seven reefs examined in the Upper Silurian rocks, three-fourths have an average direction along the strike of N. 34° W, and one-fourth an average direction bearing N. 27° E. In addition, about eighty-five cross-reefs have been observed, varying in the direction of the strike from N. 85° W. to N. 74° E. These are so called from their divergence at nearly right angles from the prevailing courses of the reefs. . . . The reefs which occur in the Lower are much thicker than those in the Upper Silurian rocks, and that, so far as yet observed, those reefs showing the greatest thickness have been found to be the richest and most extensively wrought in Victoria."

The shafts sunk in Victoria as a rule attain a much greater depth than in New South Wales and Tasmania. Mr. Hayter states†:—

"The ten deepest shafts in the Colony are those of the Magdala (now Moonlight) Company, Stawell, 2409 feet; Victory and Pandora, Sandhurst, 2300 feet; Lansell's 180 Mine, Sandhurst, 2297 feet; Victoria Quartz Company, Sandhurst, 2166 feet; New Chum and Victoria, Sandhurst, 2126 feet; North Old Chum Company, Sandhurst, 2050 feet; Great Extended Hustler's Company, Sandhurst, 2040 feet; Newington Company, Pleasant Creek, 1940 feet (not working); New Chum United Company, Sandhurst, 1922 feet; and New Chum Railway Company, Sandhurst, 1920 feet. It thus appears that the greatest depth to which the earth's crust has been pierced in this Colony (Victoria) is a little over 2400 feet. This, however, as is pointed out by the Secretary of Mines, is little more than half the depth of a bore which has been put down by the Prussian Government in search for coal at Schladebach, near Leipsic, the bore in question being the deepest in the world, viz., 4560 feet."

In New South Wales, shafts have not been sunk to a much greater depth than in Tasmania. At Adelong a shaft has been sunk to the depth of 874 feet. Two other shafts have reached the depth of 830 feet and 716 feet respectively.

The yield of gold from Tasmanian quartz reefs varies considerably from year to year. The yield at Beaconsfield varied from 1oz. 5dwts. 6grs. per ton in 1882, to 19dwts. 5grs. in 1889; at Lefroy, the yield in 1882 was 6dwts. 13grs. per ton, and in 1889 the yield fell off to 13dwts. 1gr. The yield at Fingal, Mangana, and Mathinna for the year 1889 averaged 18dwts. 11grs. The average yield from all quartz reefs in

* Report of Progress Geol. Survey of Vict., No. IV., p. 14.
† Victorian Year Book, 1887-8, p. 271.

Tasmania for 1889 was 17dwts. 16grs. In Victoria, it is stated that the average yield of the crushings in 1886 and 1887 was 9dwts. 10·31grs. and 9dwts. 9·95grs. respectively. In the deepest mines the yields varied from 4dwts. 17grs. to 2ozs. 6dwts. 14grs. per ton. The general average for many years is stated at 10dwts. 11grs.

Gold Nuggets.

In Tasmania, alluvial gold has not been worked to the same extent as in the Australian mainland, and the only nuggets of importance recorded are the following :—

(1.) Nugget found at Long Plains by Buckner, May, 1882. Weight, 9ozs.

(2.) Nugget found on the Rocky River by M'Guinty and party, March, 1883. Weight, 243ozs.

(3.) Nugget found on the Rocky River by Griffen and party, March, 1883. Weight, 143ozs.

Models of these Tasmanian nuggets are exhibited in the Tasmanian Museum, Hobart.

The largest masses of gold known have been found as nuggets in alluvial workings. The "Welcome Nugget," found in Victoria, weighed 2195 ounces, or nearly 183 pounds, and yielded £8396 10*s.* 6*d.* of sterling gold. From South Australian alluvial workings the "Blanch Barkley Nugget," was obtained, which weighed 146lbs. Besides the "Welcome Nugget," two other nuggets were found in Victoria weighing 1621 and 1105 ounces respectively.

On the 13th May, 1851, soon after the gold discovery in New South Wales by Hargreaves, there was discovered at Summer Hill Creek, N.S.W., a nugget weighing 11b. 1oz. This is probably the first nugget of importance found in Australia. The most remarkable nuggets found in New South Wales weighed 106 and 107 lbs. Troy respectively. Of these the first was found by a native boy in July, 1851, at Meroo Creek, or Louisa Creek, River Turon ; the second was found on 1st November, 1858, at Burradong, near Orange. An interesting account of the more remarkable nuggets found in New South Wales is given by Professor Liversidge.—("The Minerals of New South Wales," Sydney, 1882, pp. 66-69.)

Dana, in his Manual of Mineralogy and Lithology, p. 115, also informs us that masses of gold of considerable size have been found in North Carolina. The largest was discovered in Cabarrus Country ; it weighed 28 pounds avoirdupois—steelyard weight equals 37 pounds Troy). . . . In Paraguay, pieces from 1 to 50 pounds weight were taken from a mass of rock which fell from one of the highest mountains . . . The largest mass yet reported from California weighed 134lbs. 7ozs. A remarkably beautiful mass, consisting of a congeries of crystals weighing 101 ounces (value $4000), was found in 1865, seven miles from George Town, in El Dorado County. At Maisk, in the Ural Mountains a nugget of gold was found, weight, 96 lbs. It would seem, therefore, that the largest masses of gold known have been found in Australia.

Theories regarding the Origin of Gold Veins and their Mode of Occurrence.

Regarding the origin of gold found in quartz veins, there is much that is obscure or little understood. Of course nearly all authorities now agree in referring the formation of auriferous quartz veins to an aqueous origin. But suppose we admit that the gold is carried into rock fissures in solution with quartz from certain strata in the surrounding rocks, we have still to enquire how and from whence came the gold there in a finely-divided state? What is the true cause of shoots of gold? Why, for example, are auriferous quartz veins principally confined to rocks of Palæozoic age? Why should particular rocks, say diorite, appreciably affect the deposition of gold in veins passing through that rock? What is the exact thermal condition and the exact nature of the fluid which will hold silica, gold, and other metals in solution at the same time and in such a manner that they may in some form be deposited together? Many speculations have been advanced by able authorities, which, though of great value, fail to satisfy all the conditions required to arrive at a proper appreciation of the subject.

According to J. Arthur Phillips,* the formation of auriferous veins is now going on in various parts of the Pacific Coast. He states (see p. 601, Lyell's Elements of Geology)—"For example, there are fissures at the foot of the eastern declivity of the Sierra Nevada, in the State of that name, from which boiling water and steam escape, forming siliceous incrustations on the sides of the fissures. In one case, where the fissure is filled up with silica, enclosing iron and copper pyrites, gold has also been found in the veinstone." And again, with reference to California, he states:—"The auriferous quartz of these drifts is derived from veins apparently due to hydrothermal agency." Again, Sonsdadt states that "the sea water of the British coasts contains in solution, besides silver, an appreciable amount of gold, estimated by him at about one grain to a ton of water."†

Richard Müller, from experiments conducted by him, established the fact that "solvent action is more facilitated by increased pressure than by prolonged digestion," and hence probably the speculation of J. C. Crawford,‡ who supposes that mineral veins have been formed in the depths of the sea, and speculates thus:—"The filling of metallic veins, particularly gold and silver, has chiefly taken place at a depth of about 2500 fathoms or over; the precipitation may have proceeded from metals in the waters of the ocean, or in passes, or in water heated from below."§ According to Sonsdadt, iodine in sea water is the agency which keeps gold in a soluble and oxidised condition.‖ Dana¶ is of opinion "the veins of quartz which contain the gold occupy fissures through the slates and openings among the layers which must have been made when the metamorphic changes or crystallization took place It was a period for each gold region of long-continued heat (occupying

* Phillips on "The Gold Fields of California." Proc. Roy. Soc. Lond., 1868.
† J. Sterry Hunt.
‡ Trans. New Zealand Inst., Vol. IX., pp. 570-561.
§ Geol. Record, 1877.
‖ Brough Smyth.
¶ Manual of Mineralogy and Lithology, 1879, p. 115.

probably a prolonged age), and also of vast upliftings and disturbances of the beds; for the beds are tilted at various angles, and the veins show the fractures of the layers or the separations and gapings of the tortured strata. The heat appears not to have been of the intensity required for the better crystallization of the more perfectly crystalline schists. The quartz veins could not have been filled from below by injection; they must have been filled either laterally or from above. In all such conditions of upturning and metamorphism the moisture present would have become intensely heated, and hence have great dissolving and decomposing power; it would have taken up silica with alkalies from the rocks (as happened in all Geyser regions), along with whatever other mineral substances were capable of solution or removal, and the vapour, thus laden, would have filled all open spaces, there to make depositions of the silica and other ingredients it contained. The mineral ingredients would have been derived from the rock adjoining the veins or open spaces, or from depths below through ascending vapours. By one or both of these means the quartz must have received its gold, pyrites, and ores of lead, copper, and other materials, all having been carried into the open cavities at the same time with the silica or quartz. The pyrite of the vein is usually auriferous, showing that it was crystallized under the same circumstances that attended the deposing of gold in strings, crystals, and grains, and the same is often true of the galena."

With respect to the mine waters of Australasia, Messrs. Newberry, Taylor, Skey, and others have conducted experiments for determining the presence of gold, which they had reason to believe was held in solution in the saline waters of the deep mines. Mr. Newberry states that considerable difficulty is experienced in conducting experiments on this subject, as extreme care is requisite to exclude all possible chance of the presence of finely-divided gold, which has been held in mine-waters either by itself or with pyrites, quartz, and earthy matter. With such precautions Mr. Newberry admits that a portion of the evidence had to be discarded, and the final results were not deemed to be conclusive on the point. Much investigation is yet necessary before we can arrive at final conclusions respecting the origin of gold in quartz veins.

In this place it is of interest to observe that Sir R. Murchison's settled opinion of the "downward impoverishment of gold-bearing quartz veins" has not been sustained by practical experience in Australia, where gold is now successfully worked in many places over 2000 feet below the surface, and in one place at 2409 feet, or nearly half a mile deep. His peculiar views with respect to the superficial distribution of gold, and of the downward persistence of silver, were no doubt coloured to a great extent by the idea that the sacred writer of Job indicated such a form of distribution as regards gold and silver, in the aphorism—

"Surely there is a *vein* for the silver. . . . The earth hath *dust* of gold."

His fears for the ultimate failure of the gold supply were therefore unnecessarily increased.

Silver and Silver-Lead.

(By W. F. Ward, A.R.S.M., *Government Analyst.)*

General Observations.—Silver Ores.

Silver ores are found in lodes or veins running through rocks of various nature and geological age, *e.g.*, in Saxony and Norway in the older crystalline and metamorphic rocks, gneiss, &c.; and in various parts of America largely in limestone, in which it occurs also in masses more or less filling up caverns (ore chambers) formed by the percolation of water. The world-known Comstock lode of Nevada occurs at a junction between syenite and metamorphic slate, together with other lodes in both the syenite and slate. Silver ores are also found in veins intersecting sandstone, trap, and porphyry. They are frequently associated with ores of lead, zinc, copper, and antimony, and "vein stuff," consisting of quartz, calcite or carbonate of lime, chalybite or carbonate of iron, barytes, heavy spar or sulphate of barium, and fluorspar or fluoride of calcium.

The chief silver-producing countries are:—In Europe—Spain, Sweden and Norway, Russia, Austria, Hungary, Saxony, and England (from lead ores). In America—The United States, Mexico, Peru, Bolivia, Chili. In Australia—New South Wales.

Native Silver usually occurs in small quantity, and in association more especially with the sulphide or chloride; but masses varying in weight from 50 pounds up to 24 cwts. are reported to have been found at Kongsberg in Norway, and in Peru, Mexico, and Arizona. It is often found together with the chloride in ochreous ferruginous rocks (gossan) also associated with Native Copper. All Native Gold contains silver, usually from 5 to 20 per cent., but occasionally much more or less than those proportions.

Argentite, *Silver Glance, Sulphide of Silver*—Silver, 87·1 per cent., Sulphur, 12·9 per cent.—is one of the most abundant ores in various European and American mining districts. It is usually found in association with the sulphides of other metals, more especially with the Sulphide of Lead (Galena).

Stephanite, *Brittle Silver Ore*—Silver, 68·5 per cent., Antimony, 15·3 per cent., Sulphur, 16·2 per cent.—is abundant in Chili, Peru, Mexico, Nevada, &c. Polybasite is an allied mineral, containing about 10 per cent. of Copper and Arsenic.

Kerargyrite, *Horn Silver, Chloride of Silver*—Silver, 75·3, Chlorine, 24·7. Bromargyrite, *Bromite, Bromide of Silver*—Silver, 57·4, Bromine, 42·6. Embolite, *Chloro-Bromide of Silver*—Silver, 67·0, Chlorine, 13·2, Bromine, 19·8. The Chloride and Chloro-Bromide are very common in the mines of South America and Mexico and in some of those of the United States, also in the Broken Hill mines in New South Wales.

Other more or less important ores are:—

	Silver per cent.	Associated or combined with
Pyrargyrite *Dark-red Silver Ore* *Ruby Silver*	60	Sulphide of Antimony.

	Silver per cent.	Associated or combined with
Proustite *Light-red Silver Ore*	65	Sulphide of Arsenic.
Freieslebenite	22–24	Sulphides of Lead and Antimony.
Tetrahedrite *Grey Copper Ore* *Fahlerz* *Fahlore*	30 and under	Sulphides of Copper and Antimony or Arsenic, with sometimes those of Mercury, Iron, or Zinc.

Rarer minerals are :—

	Silver per cent.	Associated or combined with
Hessite	63	Tellurium.
Sylvanite	16	Tellurium and Gold.
Naumannite	73	Selenium and Lead.
Eucairite	43	Selenium and Copper.
Stromeyerite	53	Sulphide of Copper.
Dyscrasite	78	Antimony.
Sternbergite	33	Sulphide of Iron.
Miargyrite	36	Sulphide of Antimony.
Iodyrite	46	Iodine.
Native Amalgam	26–35	Mercury.

Of these Ores the Native Silver and the Chloride and Chloro-Bromide are found chiefly in the portions of the veins more or less oxidised and decomposed by the entrance of air and water from the surface, the deeper portions of the mines yielding the undecomposed sulphides.

Silver-Lead Ores.

In addition to the foregoing, which may be classed as Ores of Silver proper, the amount of that metal obtained from Silver-Lead Ores, Sulphide of Lead (Galena), Sulphate of Lead (Anglesite), and Carbonate of Lead (Cerussite) is very large. All Galena (Lead, 86·6 per cent., Sulphur, 13·4 per cent.) contains more or less Silver, and five ounces to the ton may be profitably extracted where favorable conditions for working exist.

At Przibram, in Bohemia, some of the mines are between 3000 and 4000 feet deep, the dressed ores yielding 49 per cent. of Lead and about 50 ounces of Silver per ton.

The Silver is present in the Galena as Sulphide, and usually in less proportion than one per cent., or 367 Troy ounces per ton.

Galena is widely distributed in stratified deposits or in veins in granite, gneiss, carboniferous limestone and grit, Silurian and Devonian slates, Lias limestone, Trias sandstone, eruptive Trachyte of Tertiary age, &c. It is commonly associated with Sulphides of Zinc (Blende), Iron (Pyrites), and Antimony (Stibnite).

Sulphate of Lead (Anglesite), Carbonate of Lead (Cerussite), and to a smaller extent Phosphate of Lead (Pyromorphite) are produced by the action of air, and of water together with the substances dissolved in it, on Galena ; the Silver present being usually at the same time converted into Chloride (Kerargyrite) by the Salt (Chloride of Sodium) in the water.

Anglesite.	Per Cent.	Cerussite.	Per Cent.	Pyromorphite.	Per Cent.
Oxide of Lead	73·6	Oxide of Lead	83·5	Oxide of Lead	74·1
Sulphuric Acid	26·4	Carbonic Acid	16·5	Phosphoric Acid	15·7
				Chloride of Lead	10·2
Metallic Lead	68·3	Metallic Lead	77·5	Metallic Lead	81·7

In Peru, massive Anglesite, yielding 120 ounces of silver to the ton, has been worked. The silver was present as chloride.

Cerussite, in large deposits up to 80 feet in thickness, is found near Leadville, Colorado. It lies between limestone and porphyry.

To the class of Silver-Lead Ores rather than to that of Silver Ores proper, belong the celebrated Broken Hill deposits, on the borders of New South Wales and South Australia, and, practically, all the argentiferous minerals of Tasmania.

"The Silverton, or Broken Hill or Barrier Ranges district extends about 80 miles in length and 30 miles in width. The lodes occur in Silurian metamorphic micaceous schists intruded by granite, porphyry, and diorite, and traversed by quartz reefs, some of which are gold-bearing. At the surface the lodes consist chiefly of hydrous iron ore (gossan) and quartz, and contain argentiferous carbonate and sulphide of lead, chloride, chloro-bromide, and iodide of silver, with more or less copper and bismuth ores and manganese oxides, but at deeper levels the proportion of sulphides increases. The Broken Hill lode, which is the largest yet discovered in New South Wales, varies in width from 10 to 120 feet, and extends for several miles."

Principal Sources of Silver and Lead in Tasmania.

In the Mount Zeehan district of Tasmania, Argentiferous Lead Ore has been found at intervals over some thirty square miles of country. The principal ore is Galena, and the character of the richer more or less selected portions of ore from this district is indicated by the following results of trial smeltings and assays:—

Ore.	Lead, per cent.	Silver, ounces per ton.
Smeltings.		
Galena, 193 tons.....	50	64
" 5 tons.....	57	55
" 12 tons.....	65	92
" 15½ tons.....	70	110
" 9½ tons.....	70	176
" 11 tons.....	56	99
Carbonate, 32 tons.....	49	172
" 26 tons.....	37	216
Kaolin Ore, 22 tons ...	12	201
" 11½ tons ...	17	432
Assays.		
Assays (Provis), 18 ...	65	80 { max. 156 / min. 26
Assays (Ward), 53 ...	63	62 { max. 189 / min. 11

Anglesite, with Oxides of Iron and Manganese, and yielding up to 480 oz. of silver per ton, has also been discovered.

These ores are found in veins varying in width from a few inches up to several feet, in some places opening out to eight feet (Balstrup's, 15 feet), with about half that thickness of solid Galena. One or two of these have been traced continuously for upwards of a mile in length. The veins run through "country rock" of Silurian age, this consisting mainly of thin-bedded slates of various colours, traversed by bands of quartz, with "tuff-beds lying between the beds of Silurian slate and sandstone conformably" (Montgomery). The "vein formation" is principally clayey and siliceous Iron Oxide (altered Carbonate of Iron), with more or less Blende, Pyrites, Calcite, and Barytes.

The Mount Dundas field extends from the north-east side of the Mount Zeehan district northwards to the Pieman River. "An immense number of outcrops of iron and manganese oxides have been discovered all over this field" (Montgomery), the country rock being mainly slate and sandstone, with patches of serpentine.

The contents of the lodes, which vary in width from a foot to three chains, are for the most part completely oxidised down to the water level, any Lead present occurring as Carbonate, Sulphate, Phosphate, or, not unfrequently, as Chromate. In a few of the smaller lodes, however, Galena, associated with unaltered Carbonate of Iron, has been found, and assays of this have yielded Silver at the rate of 1800 ounces per ton.

The Heazlewood district lies between Mount Bischoff and Corinna, near the Heazlewood and Whyte Rivers. The ore deposits are said to be "dykes intersected by strings of Galena" running through Diorite or Serpentine. These "strings" are from half an inch to four and a half inches wide, and have yielded by assay from 73 to 220 ounces of Silver to the ton of Galena.

The deposit known as "Godkin's Find" is in this district, being on the Whyte River, about 14 miles south west of Mount Bischoff. This is not a "fissure vein," but either a "dyke lode" or a "mineralised bed" at the junction of Diorite with sandstone of Silurian age. The "formation," said to be 350 feet in width and half a mile in length, consists partly of Calcite, impregnated with Galena, and partly of Kaolin, with Oxides of Iron and Manganese, and veins of Galena, with more or less Cerussite as a product of its decomposition.

Various assays have yielded at the rate of from 100 to 800 ounces of Silver per ton of ore, while a few small selected specimens contained that metal in the proportion of 1600 to nearly 4000 ounces per ton. The Silver is present in the Cerussite as Kerargyrite and Embolite.

The Scamander deposit, near the river of that name on the East Coast, occurs in a dyke of quartz-porphyry in metamorphic schists. The Galena is found in quartz veins, together with much Iron and Arsenical Pyrites, and more or less Gold.

Assays have yielded at the rate of 20 to 200 ounces of Silver and 8 to 9 dwts. of Gold to the ton. A bulk test of 50 tons yielded about 33 ounces of Silver to the ton. The workings, at present abandoned, have reached a depth of 100 feet.

Argentiferous Galena has also been found, and more or less opened out, at Penguin, near sea level, and on Mount Claude; Fahlore from Penguin and Mount Zeehan; Sulphide of Antimony, yielding 8 to 18

ounces of Silver to the ton, from Mount Bischoff; and more or less argentiferous minerals from the Gawler River, Hampshire Hills, Arthur and Savage Rivers, Constable's Creek, &c., have also been reported.

General Remarks.

In 1859, the year of the discovery of the marvellous Western deposits, the yield of Silver for the United States was valued at 100,000 dollars, while in 1876 the Comstock lode alone yielded over 20,000,000 dollars; more than one-third of this, however, must probably be deducted for the value of the Gold found in association with the Silver ores. For the same year the estimated production for the whole of the United States was 28,000,000 dollars; for Mexico and South America, 25,000,000; and for the whole world, about 65,000,000 dollars, roughly equivalent to the same number of ounces of metal.

In Australia, the yield of New South Wales for 1869 was 753 ounces, rising in 1876 to 69,179 ounces. Nearly the whole of this, however, together with 26,356 ounces for Victoria, was separated from the gold melted at the Mints.

In 1885 the Sunny Corner Mine yielded 634,000 ounces of Silver and 6413 ounces of Gold; while the yields of the Broken Hill Proprietary Mine for the few years of its working have been—

	Ounces.
Half-year ending 30th November, 1885.....	35,605
Year ending 30th November, 1886	1,016,269
Ditto, 1887	2,103,225
Ditto, 1888	3,924,192
Ditto, 1889	6,003,299
Half-year ending 31st May, 1890	3,814,486

The first discovery of this lode was in September, 1883. The ore averages about 40 ounces of Silver per ton, and about 17 per cent. of Lead.

The result of the greatly increased production of Silver during the last 30 years has been to lower its market value from 60½ pence per ounce in 1871 to little more than 42 pence in 1889.

The *rise* in value produced by the immense gold discoveries in California and Australia was only from 59½*d.* to 62*d.*

The World's Gold and Silver Produce, 1781–1886.

The following table of the value of the world's produce of Gold and Silver between the years 1781 and 1886, has been compiled from various sources, but chiefly from a table published by Mr. Soetbeer, quoted by Mr. Augustus Sauerbeck (*Journal of Statistical Society*, September, 1886, p. 583) :—

[Value columns in millions of £ and decimals, thus 2·43 = £2,430,000.]

	Average Annual Production.		Value of Average Annual Production.		
	Gold.	Silver.	Gold.	Silver.	Total.
	Kilos.*	Kilos.*	£	£	£
1781–1800	17,790	879,060	2·43	7·74	10·17
1801–10	17,778	894,150	2·43	7·88	10·31
1811–20	11,445	540,770	1·56	4·76	6·32
1821–30	14,216	460,560	1·94	4·06	6·00
1831–40	20,289	596,450	2·77	5·25	8·02
1841–50	54,759	780,415	7·48	6·87	14·35
1851–55	197,515	886,115	27·00	7·81	34·81
1856–60	206,058	904,990	28·14	7·97	36·11
1861–65	185,123	1,101,150	25·29	9·70	34·99
1866–70	191,900	1,339,085	26·21	11·80	38·01
1871–75	170,675	1,969,425	23·31	17·35	40·66
1876–80	172,800	2,450,252	23·60	21·59	45·19
1881	157,900	2,592,639	21·56	22·84	44·40
1882	146,900	2,769,065	20·06	24·40	44·46
1883	143,940	2,895,520	19·66	25·51	45·17
1884	144,000	2,860,000	19·67	25·20	44·87
1885	...	...	20·38	...	...
1886	...	...	19·36	...	...

* One kilogramme equal to 2·2046 lbs. avoirdupois pure metal, or equal to 35·07 ozs. standard gold ($\frac{22}{24}$ fine) and 34·76 ozs. standard silver ($\frac{222}{240}$ fine).

SILVER produced, Year 1886*, showing chief Sources of Supply.

	Millions oz.
United States	39·443
Mexico	25·522
Bolivia	12·374
Germany	7·855
Chili	5·797
Peru	3·094
Spain	1·746
France	1·689
Austria-Hungary	1·617
Australasia	1·054
Italy	·940
Japan	·799
Great Britain	·325
All other countries	1·565
Total	103·770

* Figures for Australasia takan from Mr. Hayter's Year Book, 1887–8, p. 267 ; all other countries from Mr. Kimball's Mint Report for 1887.

Industrial Products of the Carboniferous System.

The industrial products of the system are numerous and important, although varying in abundance in different countries. *Limestones* in Tasmania are abundant throughout the Island wherever the marine beds are largely developed—such as at Bridgewater, Cascades, Porter Hill, Blackman's Bay, Maria Island, Chudleigh, Richmond, Middle Arm, Tamar, and elsewhere. These limestones are generally fossiliferous, the genera *Eurydesma*, *Pachydomus*, *Aviculopecten*, *Spirifera*, and *Productus* being especially characteristic. Messrs. Dally at one time worked the limestones of the system at Middle Arm on the Tamar, but the quarry has now been abandoned in favour of richer bands belonging to the Silurian system cropping from under the more recent system a little further up the creek.

Quarries have long been worked near Hobart, notably at Bridgewater; and as certain beds are well adapted for the manufacture of hydraulic cement, attempts have been made to form an industry of this kind at a point on the New Norfolk Road a mile or so beyond the Bridgewater Causeway. The following analysis, prepared for the writer by Mr. W. F. Ward, Government Analyst, gives a fair conception of the average quality of the limestones; although it must be stated that the quality of the bands is extremely variable. A similar analysis of the Cambro-Silurian limestone worked at Chudleigh and at the Don is also given for comparison :—

	Bridgewater Limestone (Carboniferous).	Chudleigh Limestone (Cambro-Silurian.)
Carbonate of lime	84·0	91·5
Carbonate of magnesia	1·0	1·2
Carbonate of iron	2·0	1·5
Insoluble residue (sand, &c.).....	12·3	5·8
Organic matter, &c. (by difference)...	0·7	0·0
	100·0	100·0

Some of the fossiliferous bands at Maria Island and elsewhere would afford figured marble of great beauty.

Marls are abundant, flanking the older greenstones, and are often utilised by farmers. *Sandstones* of fair quality are also worked in certain beds overlying the uppermost beds of the system; but some of these formations may yet prove to belong to the base of the succeeding Mesozoic period. *Coal* occurs towards the close of the system in such places as the Don, Tarleton, Latrobe, Port Cygnet, Tippagory Range, Harefield, and Adventure Bay. A seam of fair quality, of about 2 feet thick, is now being worked at Port Cygnet, and also near Quiet Corner, Adventure Bay; and in the Mersey and Don Basin two or three seams have been worked at different places for many years past. The coal seams of this system, although largely developed in Europe, America, and in other countries, are but poorly represented in Tasmania. In New South Wales the Coal seams of the same horizon are of much greater extent, as at Greta and Anvil Creek. In the same Colony there are also important seams (Newcastle) occurring in a formation which appears to be more recent than the Tasmanian beds of the

Mersey. In the Newcastle beds there are many fine seams of coal worked, and of such excellent quality that they are exported and largely consumed in the various Colonies of Australasia. No coal exactly equivalent to the Newcastle beds of New South Wales has, as yet, been found in Tasmania. The greater development of coal seams in this Island occurs in the members of the Mesozoic system, described hereafter.

Industrial Products of the Mesozoic Period.

The industrial products belonging to the rocks of this age in Tasmania are both varied and of great commercial value. *Sandstones* of every shade of color, and of the finest quality, may be obtained, and these have been quarried largely for building purposes, more particularly in the neighbourhood of Hobart, Bellerive, Tea Tree, Ross, West Tamar, Spring Bay, Okehampton, &c. The fine-grained white sandstones of Okehampton and Spring Bay have been held in high esteem, and have been largely used in the construction of important public buildings in Melbourne, as well as locally. The intrusive *Greenstones* of the period are largely used for foundations of buildings, and are everywhere utilized for roadmaking. The broken metal makes excellent macadamised roads. *Fireclays* of good quality exist in association with our coal seams, but they have not as yet been much utilized in the manufacture of drain-pipes, fire-bricks, and earthenware, for which many of the bands are admirably adapted.

The most characteristic and most valuable product of the period, found extensively throughout the Island, is *Coal.* The seams in some districts, notably in the Fingal Basin, are numerous, and some now worked are of considerable thickness and of very fair quality. The Cornwall coal, from Fingal, is an excellent household coal, and similar seams in this locality are of equal value. The various coal seams of Tasmania, however, contain a considerable proportion of ash, though rich in carbon; but experience has shown us that, with some slight modification of the fire-bars of locomotives, the coal can be profitably used for steam purposes. When modifications of this kind are made, there will, no doubt, be a much larger demand for our coal. Facilities for profitably working the important coal seams in the Fingal district have now been afforded by the extension of the Government Railways.

The coal seams in different districts, as well as in the same basin, vary considerably in quality, as in other countries. In Tasmania their development can scarcely be said to have begun. When this is carried out, no doubt seams of finer quality will be discovered.

The following Analysis by experts show the varying character of the seams hitherto worked; and for purposes of comparison they are contrasted with each other and with the typical coals of many countries, as in the following table. For the analysis of the coals of other countries the author has been indebted to the comprehensive and useful tables compiled by Harrie Wood, Esq., Under Secretary for Mines, New South Wales—(Mineral Products of New South Wales: Sydney, (1882).

Analyses of Coal.

	Water.	Vol. Hydro-Carbon.	Fixed Carbon.	Ash.	Sulphur.	Sp. Gr.	Coke.	Analyst.
England.								
Newcastle—								
Wellington	26·93		71·11	1·08	0·88	...	72·19	J. A. Phillips
Bowden Close	29·66		67·41	2·28	0·65	...	69·99	,,
Naswell Coal Co.	37·41		55·45	5·93	1·21	1·27	61·38	,,
Original Hartley	40·34		55·15	3·07	1·44	1·15	58·22	,,
Lancashire, Caldwell, and Thomson's Higher Delf	44·39		48·25	5·95	1·41	1·27	54·20	,,
Scotland.								
Wallsend, Elgin	40·02		47·75	10·70	1·53	1·20	58·45	,,
Kilmarnock, Sherrington	49·81		48·05	1·25	0·89	1·24	49·30	,,
Borneo.								
Sarawak	48·69		47·00	3·60	0·71	...	50·60	Tookey
Sumatra.								
Ranti	5·22	39·71	53·75	0·83	0·49	...	54·48	Ward
India.								
Hyderabad	9·12	35·33	45·19	9·55	0·81	...	54·47	,,
Ditto	8·68	45·37	44·59	12·65	0·51	...	57·24	,,
China.								
Peking	0·53	15·60	77·65	5·82	0·40	...	83·47	Tookey
Ditto	1·85	34·23	49·33	13·82	0·77	...	63·15	,,
Japan.								
Takasima, in Nifon	1·50	40·38	53·50	4·00	1·08	...	57·50	Godfrey
Hizon, Shointani	55·35		11·30	31·00	2·35	...	42·30	,,
ditto, Sakakuchi, Karats	46·12		46·90	5·60	1·38	...	52·50	,,
Australasia.								
New Zealand—								
Bremmer Coal Co., Grey River	1·59	35·68	56·62	6·11	...	...	62·73	Skey
Kawakawa Colliery, Bay of Islands	4·18	42·63	50·15	3·04	...	...	...	,,
Walton's Mine, Whangarei Harbour	7·50	38·83	41·17	10·57	...	...	...	,,
West Wangui	6·70	33·98	47·55	7·55	...	...	...	,,
Inangahua, Murray Creek	7·68	29·49	54·73	1·08	...	...	...	,,
Malvern Hills, Canterbury	4·15	19·89	68·54	7·42	...	...	...	,,
Iwaka, Catlin's River	4·20	27·08	59·60	1·40	...	...	...	,,
Hydrous Coals, Lignite, and Brown Coal—								
Night Caps, Southland	21·38	45·96	29·30	3·36	...	...	...	,,
New South Wales—								
(Exported Coals.)								
Ferndale, Newcastle	2·10	36·22	57·24	3·84	0·60	1·30	61·08	Dixon
Wallsend, ditto	2·75	34·17	57·22	4·64	1·22	1·33	61·86	Liversidge
Waratah, ditto	2·21	36·70	55·82	4·15	1·12	1·30	69·97	,,
New Lambton, ditto	2·61	30·62	59·56	6·72	0·49	1·29	66·28	Dixon
Anvil Creek	1·74	41·10	47·90	7·80	1·46	1·32	55·70	Liversidge
Greta	2·25	39·21	54·41	2·72	1·41	1·29	57·13	,,
Illawarra	0·70	22·04	68·08	8·76	0·42	1·35	76·84	Dixon
Bulli	0·65	21·65	65·86	11·28	0·74	1·37	76·96	,,
(Coal chiefly used locally or not worked.)								
Lithgow Valley	1·95	34·18	52·34	10·12	1·41	1·33	62·46	Liversidge
Eskbank	2·00	33·55	49·97	12·91	1·57	1·35	63·18	,,

	Water.	Vol. Hydro-Carbon.	Fixed Carbon.	Ash.	Sulphur.	Sp. Gr.	Coke.	Analyst.
N. S. Wales—*continued.*								
Bowenfells	2·36	28·35	56·54	11·40	1·35	1·40	none	Liversidge
Katoomba	2·90	25·82	61·34	9·26	0·68	1·33	70·60	„
Ditto	2·25	26·28	60·84	10·04	0·57	1·40	none	„
Dymocks, Jamberoo	1·50	20·22	56·56	20·70	1·02	1·46	none	„
Berrima	1·26	15·61	48·34	33·92	0·87	1·51	82·26	Dixon
Ditto	1·26	26·61	62·28	9·40	0·45	1·41	71·68	„
Rex Creek, Singleton	2·80	37·00	54·00	5·60	0·51	...	59·60	Latta
Queensland—								
Thomas's Mine, Bundamba, Ipswich	29·80		59·20	11·00	...	...	70·20	Gregory
Waterstown Mine, Ipswich	25·20		62·00	12·80	...	...	74·80	„
Tivoli, Ipswich	26·70		66·40	6·90	...	...	73·30	„
Walloon, West Moreton	41·00		42·00	17·00	...	...	69·00	„
Burrum Mine, Maryborough	31·50		64·00	4·50	...	...	68·50	„
Tasmania—								
Mt. Nicholas, upper seam	6·45	36·55	48·57	8·43	...	...	...	Ward
Ditto, lower ditto	3·80	32·20	49·17	14·83	...	...	...	„
Ditto, 8-feet seam	7·6	35·75	50·00	7·25	...	...	...	„
Fingal	8·00	31·20	42·30	18·50	...	...	...	„
Mount Nicholas	5·1	33·00	46·00	15·90	0·60	1·40	...	Woodgate
Port Cygnet	1·2	19·90	64·80	14·10	...	...	78·90	Lewald
Adventure Bay	3·0	14·20	69·90	12·90	...	...	82·40	„
York Plains	4·3	10·70	59·50	25·50	...	...	...	„
Ditto	4·1	16·40	58·40	21·10	...	...	79·50	„
New Town	3·7	13·90	53·10	29·30	...	...	82·40	„
Sandfly, upper seam	5·8	25·8	59·20	9·20	...	...	...	Ward
Ditto, ——?	1·85	2·85	81·40	14·00	0·80	...	...	Newbery
Ditto, upper seam	5·0	23·30	62·20	8·70	0·80	...	...	Lewald
Ditto, middle seam	5·3	16·70	63·50	14·70	0·80	...	...	„
Ditto, lower seam	5·4	12·70	67·00	14·30	0·60	...	...	„
Jerusalem	2·8	12·50	56·80	27·90	...	...	84·70	„
Ditto	4·1	20·60	57·40	17·90	...	...	...	Woodgate
Gardner's Bay Coal Mining Association	2·9	15·70	63·50	17·90	...	...	81·40	Lewald
Brock's Mine, Compton	8·6	15·60	59·00	16·80	...	...	...	Ward
Mersey	12·2	37·37	40·33	5·0	5·0	...	...	
Bicheno	3·8	33·90	54·20	8·10	...	...	...	

ANALYSES of Tasmanian Coal. (Referred to in the Report of the Lieutenant-Governor, dated 18th May, 1849.)
By H. T. De La Beche.

Locality or Name of Coal.	Mean Composition of Average Samples of Coal.						Remarks.
	Carbon.	Hydrogen.	Ash.	Sulphur.	Nitrogen.	Oxygen.	
South Cape	63·33	2·89	29·96	0·98	1·27	1·57	Very large amount of ash. Carbon, poor; quality indifferent.
Mount Nicholas, Break o' Day	57·38	3·93	27·55	0·90	1·15	9·09	Quality very indifferent; carbon, poor.
Fingal	57·21	3·40	29·10	1·32	1·20	7·77	Same quality as last.
Jerusalem	68·17	3·97	19·22	1·12	1·62	5·90	Better quality, approaching Newcastle coal; ash still large.
Douglas River, East Coast	70·44	4·20	14·50	0·70	1·12	9·04	Good quality, like Newcastle, but large quantity of ash.
Tasman's Peninsula	65·53	3·34	26·40	1·03	1·89	1·81	Indifferent.
Schouten Island	64·00	3·54	27·17	0·85	0·94	3·50	Indifferent.
Adventure Bay	80·20	3·05	8·67	1·90	1·36	4·82	Best specimen like good Newcastle, though the ash is also large.
Whale's Head and South Cape	65·85	3·18	21·50	1·14	1·32	7·01	Indifferent; ash large.

N.B.—These coals all contain a large quantity of ash. The amount of sulphur is not remarkably large in any of them, but still considerable. The coals cannot be considered as first-class, but still they may be of much value in a colony so distant from the European coal fields as Van Diemen's Land.—*Museum of Practical Geology*, 26 *July*, 1850.

Industrial Products of the Tertiary System.

The industrial products of the system are numerous. Among the most important in Tasmania may be noted *tin* and *gold*, both of which, as *stream tin* and *alluvial gold*, afford a great part of our national wealth. In the "deep leads" and other Tertiary drifts in the North-eastern and Western Districts of Tasmania these valuable metals afford employment to a large body of miners, and the yearly average value of *gold* and *tin* thus derived for the last five years has equalled £500,487, and the exports for these metals amounted to £5,153,742 for the ten years ending with 1888. (See also chapter relating to Tin, under Archæan system.) The system also contains *limestones* and *marls* of excellent quality which are used for mortar, agriculture, and other purposes. The *siliceous* and *ferruginous sands* of many of the beds are used for mortar, metal moulding, &c. The *gravels* are used for railway ballast, roads, walks, and concrete; whilst the *clays* are generally used in the manufacture of bricks, roofing-tiles, drain-pipes, drain-tiles, pottery, and the like. The *diatomaceous* or *infusorial earths* found in some places are used in Victoria for the manufacture of lithofracteur, and for polishing and other purposes. The beds of the system also contain extensive deposits of *lignite* and *retinite*; and although not utilised in Tasmania, they may yet be turned to profitable account as fuel and in the preparation of varnishes. *Clay ironstone*, in nodular masses, occurs in great abundance in the lower parts of the Launceston Tertiary Basin; and *topaz* and other precious stones are found among the stanniferous drifts of the mining districts. Altogether, the products of the system are of great industrial value.

Principal Compounds of Rocks.

Although every one of the 67 known elements of Chemistry is to be found in the mineral Kingdom—embracing all elements entering into the composition of plants and animals—the principal rock-forming minerals are not composed of any single element, but of compounds of two or more, which combine according to the proportions indicated by the ascertained *combining weights*. Hydrogen, considered to be the lightest of all the elements, is taken as the *standard* and *unit* of the others. Thus, *water*, one of the most common of the primary compounds, is indicated by the symbol H_2O, meaning that these elements combine to form water in the proportions of 2lbs. of hydrogen to 16lbs. of oxygen = 18lbs. Similarly silica, silicic acid, or pure quartz, is represented by SiO_2, meaning that these elements combine in the proportions of 1 of *silicon* to 2 of *oxygen*, or by simple combining weights, in the ratio of 28lbs. of the former to 32lbs. of the latter = 60lbs. weight of *hydrogen*. Of all the elements, *oxygen* stands pre-eminent in the readiness with which it enters immediately into combination with others; and hence we are prepared to find that it enters into the composition of nearly all the constituent compounds of the common rocks, of which the following are the principal:—

Name of Primary Compound.	Symbol.	Percentage Weight Equivalents.
Water	H_2O	11·11 : 88·89 = 100
Silica	SiO_2	46·67 : 53·33 = 100
Alumina	Al_2O_3	53·3 : 46·7 = 100
Potash	K_2O	83 : 17 = 100
Soda	Na_2O	74·2 : 25·8 = 100
Lime Carbonate	$(CaO_3)C$	44 : 56 = 100
Magnesia	MgO	60 : 40 = 100
Rock Salt	$NaCl$	39·3 : 60·7 = 100
Baryta or Barytes	BaO	89·5 : 10·5 = 100
Sulphuric Acid	$(SO_3)(H_2O)$	81·6 : 18·4 = 100
Carbonic Acid	CO_2	27·65 : 72·35 = 100
Lithia	Li_2O	46·7 : 53·3 = 100
Iron Protoxide	FeO	77·8 : 22·2 = 100
„ Sesquioxide	Fe_2O_3	70·0 : 30 = 100
Lead Sulphide	PbS	86·6 : 13·4 = 100
„ Oxide	Pb_3O_4	90·7 : 9·3 = 100
Silver Sulphide	Ag_2S	87·1 : 12·9 = 100
„ Chloride	$AgCl$	75·3 : 24·7 = 100
Copper Oxide (Cuprite)	Cu_2O	88·8 : 11·2 = 100
„ Pyrites	$CuFeS_2$	34·6 : 30·5 : 34·9 = 100
Tin Oxide	SnO_2	78·67 : 21·33 = 100

CATALOGUE of the Common and of the more important Minerals of Tasmania, showing the Principal Localities where they are known to occur.

Name.	Specific Gravity.	Relative Hardness.	Principal Compounds.	Principal Localities in Tasmania.*
1. Silica Quartz	2·6	7	Si. O.	Mount Maurice, Branxholm, Mount Heemskirk; common in auriferous and stanniferous drifts.
(Transparent Varieties.)				
2. „ Rock Crystal				Blue Tier, Weld River.
3. „ Amethyst				Blue Tier, Mount Cameron, Blue Tier.
4. „ Rose Quartz				Blue Tier, East Coast Tin Mines, Mount Cameron, George's River, St. Paul's, Mount Maurice, Flinders' Island
5. „ Cairngorm or Smoky Quartz				
6. „ False Topaz				
(Semi-transparent Varieties.)				
7. „ Chalcedony				Beaconsfield, Cornelian Bay, East Coast Tin Mines, Lisle, Mount Cameron, Meredith Range, Heazlewood River, Pieman Track.
8. „ Cornelian and Sard				Cornelian Bay, Hobart, Longford, Lake Sorell, Supply Creek, Flinders' Island.
9. „ Agate				
10. „ Onyx or Sardonyx				
11. „ Flint or Hornstone				Mount Bischoff, Mount Nelson Range, Macquarie Harbour.
(Opaque Varieties.)				
12. „ Jasper				Lake Sorell, Cornelian Bay, Supply Creek, Gould's Country (*menilite* and *hyalite*), Macquarie Harbour.
13. „ Bloodstone				
14. „ Opal, common	1·9 - 2·3	5·5 - 6·5		
15. Talc	2·5 - 2·8	1	Si. 62·8, Mg. 33·5, W. ·37	
16. Chlorite	...	2 - 2·5	Si., Mg., Al., Prot. of Iron, Water	Mount Bischoff, Mount Granville, Mount Heemskirk, Ben Lomond.
17. Serpentine	...	2·5 - 4	Si., Mg., Water	Anderson's Creek, Whyte River, Pieman River, Mount Heemskirk, Heazlewood River, Forth River, Mount Ramsay.

* In determining the localities for the various minerals, the author was kindly assisted by the following gentlemen, viz. :—The Hon. Jas. Smith, Leven; Mr. W. F. Petterd, F.Z.S., Launceston; Mr. H. W. Ferd. Kayser, Waratah; Mr. W. B. Jones, Waratah; Mr. A. J. Taylor, Hobart; and Mr. W. F. Ward, Government Analyst.

Name.	Specific Gravity.	Relative Hardness.	Principal Compounds.	Principal Localities in Tasmania.
18. Augite (pyroxene)	...	5 - 6	Si. Lime, Mg., Prot. of Iron.	Common as a constituent of all basic eruptive rocks, like diabase and basalt.
19. Hornblende, Asbestos	3·0 - 3·5	5 - 6		Common as an essential constituent of such rocks as syenite, diorite, and hornblende schist.
20. Chrysolite or Olivine	3·4	6 - 7	Si. Mg., Prot. of Iron	A common constituent of basalt and other eruptive rocks.
21. Tourmaline	3·1	7 - 7·5	Si., Al., Mg., Bor. A., Fluo., Oxides of Iron	Occurs in slate, gneiss, granite, and in various crystalline schists.
22. Garnet	3·5 - 4·3	6·5 - 7·5	Si., Al., Lime, Iron, Mg., Mang.	Common in gneiss and schists; Mount Heemskirk, Hampshire Hills, Mount Granville, Mount Cameron, Moorina, Mount Claude.
23. Topaz	3·5	...	Si., Al., Fluor.	Mount Bischoff, Blue Tier, Cape Barren Island, Flinders' Island, George's River, Ringarooma River.
23A. Beryl	2·7	7·5 - 8	Si., Al., Glucina.	
24. Zircon or Hyacinth	4·0 - 5·0	6·7	Si., Zirconia	Common in stanniferous drifts.
25. Felspar*	2·3 - 2·8	...	Si., Al., Pot. or Soda-lime	Abundant as a constituent of various kinds of eruptive rocks, especially granites and porphyries.
26. Mica	2·7 - 3·1	2·2 - 5	Si., Al., Mg., Pot., Iron	Abundant in granite and crystalline schists.
27. Zeolites – term for a large class of Silicates	...	...	Si., Al., Lime, Soda, Pot., Water	Occurs filling cavities of basalt lava and other eruptive rocks.
28. Corundum or Sapphire	3·9 - 4·2	9	Al.	Ringarooma and George's River.
29. Spinel	3·5 - 4·0	8	Al., Mag.	Denison Gold Field, Ringarooma River, Gould's Country, Thomas' Plains, Mount Ramsay, Arthur River, Mount Horror, Boobyalla.
30. Chrysoberyl	3·5 - 3·8	8·5	Al., Glucina	Occurs in the neighbourhood of gneiss and granite in rivers.
31. Diamond	3·5	10	Carb.	One small sample reported from Arthur River (Petterd).
32. Graphite, or Black Lead	2	1 - 2	Carb.	Mount Zeehan, Anderson's Creek, Den Range.
33. Coal	...	...	Carb.	New Town, Old Beach, Sandfly, Port Cygnet, Adventure Bay, Hastings, Hamilton, Coal Hill, Richmond. Prosser's River, Spring Bay, Bicheno, Douglas River, Seymour, Harefield, Mount Nicholas, Mount Munro, Ben Lomond, Fingal, York Plains, Longford, Tarleton, Don, Jericho, Jerusalem, Schouten Island.
34. Apatite	3·2	5	Phos. Acid, Lime, Fluor	Maria Island.

35. Fluor	3·0 - 3·2	4	Flu. of Calc.	Mount Bischoff, Ben Lomond, Branxholm, Mount Granville, Mount Ramsay.
36. Calcspar or Calcite	2·5 - 2·8	3	Carb. Acid, Lime	Bridgewater, Risdon, Maria Island, Gordon River, Chudleigh, Ilfracombe, Beaconsfield.
37. Magnesite	2·8 - 3·0	4 - 5	Carb. Acid, Mag.	York Town; occurs with serpentine and limestone.
38. Dolomite	2·8 - 2·9	3·5 - 4	Carb. Acid, Lime, Mag.	
39. Aragonite	2·9	3·5 - 4	Carc. Acid, Lime	Waratah, Bridgewater, West Tamar.
40. Rock Salt	...	...	...	
41. Sulphate of Alumina	...	...	Al.	Blue Tier; secondary product, with sulphates of nickel, zinc, iron, and magnesia (W. F. Ward).
42. Alum	...	...	Al.	Mount Bischoff, Don Coal Mines, St. Mary's, Dromedary, Ben Lomond, Chudleigh.
43. Epsom Salt	...	...	Mag.	Exton.
44. Nitre or Saltpetre	...	...		
45. Gypsum, Selenite, Alabaster, or Plaster of Paris	2·3	2	Sulph. Acid, Lime, Mag.	Mount Horror.
46. Barytes or Heavy Spar	4·3 - 4·8	2·5 - 3·5	Sulph. Acid, Baryta	Mount Lyell, Mount Heemskirk, Surrey Hills, Mount Claude.
47. Sulphur	2·1	1·5 - 2·5	Sulph.	
48. Tin Ore 49. Stream Tin	6·8 - 7·0	6·0 - 7·0	Tin, Ox.	Mount Bischoff, Mount Heemskirk, Hampshire Hills, Ringarooma, Gladstone, Branxholm, Ben Lomond, Avoca, Schouten Island, Clarke Island, Mount Munro, Flinders' Island, Mount Ramsay, George's Bay, Blue Tier, Thomas' Plains, Moorina.
50. Wood Tin	...	...	...	Storie's Creek, Ben Lomond, Gould's Country, Mount Ramsay.
51. Molybdenite	4·5 - 4·6	1·0 - 1·5	Mol., Sulph.	Heemskirk, Mount Ramsay, Mount Morris, Schouten Island, Macquarie Harbour, Branxholm, Cape Barren Island.
52. Bismuth	9·6 - 9·8	2·0 - 2·5	Bis.	Mount Heemskirk, Mount Ramsay, Belmont (Cascade River), Weldborough.
53. Antimony Sulphide	4·6 - 4·7	2	Ant., Sulph.	Mount Bischoff, Mount Zeehan, Heazlewood River, Table Cape (occurs with galena).
54. Arsenic	5·7 - 5·8	3·5	Ars.	
55. Arsenic Sulphurets	3·5	1·5	Ars., Sulph.	

* For the determination of the principal varieties, see page 347 of the author's work on the "Geology of Tasmania."

Name.	Specific Gravity.	Relative Hardness.	Principal Compounds.	Principal Localities in Tasmania.
56. Iron, Native	7·0 - 7·8	...	Iron	
57. „ [a]Pyrites, [b]Magnetic Iron Pyrites	4·8 - 5·1	6·0 - 6·5	Iron, Sulph.	Donaldson River, Mount Heemskirk, King River, Mount Lyell, Meredith Range, Blue Tier, Mount Bischoff, Leven, Penguin, Anderson's Creek, Ilfracombe, Circular Head, Pieman River, Mount Ramsay.
58. „ Arsenical Pyrites	6·0 - 6·3	5·5	Iron, Ars., Sulph.	
59. „ Magnetic	5·0 - 5·2	5·5 - 6·5	Iron, Ox.	
60. „ Specular, Hematite, or Micaceous	4·5 - 5·3	5·5 - 6·5	Iron, Ox.	
61. „ Red Oxide or Red Ochre	...	...	Iron, Ox., Water	Macquarie Harbour.
62. „ Brown Oxide or Brown Ochre	...	...	Iron, Ox., Water	
63. „ Titanic	4·5 - 5·3	5·0 - 6·5	Iron, Ox., Tit. Acid	
64. „ Chromic	4·4 - 4·6	5 - 5	Chrom. Iron, Mag., Al.	
65. „ Greenearth	...	...	Sil., Iron	
66. „ Carbonate	3·7 - 3·9	3	Iron, Carb. Acid	Specimen Reef, Long Plains, Mount Zeehan.
67. Manganese Ores (various)	4·5	Below 3	Ox., Mang.	Mount Zeehan, Mount Claude, Denison River, Henty River, Forth, Mount Bischoff.
68. Arsenical Nickel	7·2 - 7·8	5·0 - 5·5	Nick. Ars.	Penguin.
69. Smaltine (Tin-white Cobalt)	6·3 - 6·6	5 - 5	Cob., Ars.	Mount Heemskirk, Castle Forbes Bay, Penguin.
70. Cobalt Bloom	2·9 - 3·1	1·5 - 2·0	Cob., Ars., Ox., Water	
71. Blende, or Black Jack	4·0 - 4·1	3·5 - 4·0	Zinc, Sulph.	Mount Bischoff, Mount Zeehan, Mount Heemskirk, Mount Granville, Ringarooma, George's Bay, Blue Tier.
72. Zinc Calamine or Carbonate of Zinc	4·1 - 4·5	5	Carb. Acid, Zinc	Mount Bischoff.
73. „ Silicate or Smithsonite	3·3 - 3·5	5	Zinc, Sil.	
74. Galena	7·4 - 7·7	2·5	Lead, Sulph.	Mount Bischoff, Heazlewood, Mount Zeehan, Mount Dundas, Savage River, Penguin Creek, Mount Claude, Scamander River, Beaconsfield, River Tamar.
75. Lead Carbonate (Cerussite)	6·4 - 6·6	3·5	Lead, Carb. Acid	
76. „ Sulphate (Anglesite)	6·5	3·0	Lead, Sulph. Acid	Mount Zeehan, Heazlewood River.
77. „ Phosphate (Pyromorphite)	6·9 - 7·1	3·5 - 4·0	Lead, Phos. Acid, Chlor.	
78. Cinnabar	8·0 - 8·2	2·5	Mercury, Sulph.	Fingal or Avoca ?
79. Quicksilver or Native Mercury	...	...	Mercury	
80. Copper, Native	8·9	...	Copper	Mount Lyell, Duck River, Mainwaring Inlet, Circular Head, Mount Bischoff.
81. „ Vitreous	5·5 - 5·8	2·5 - 3·0	Cop., Sulph.	Mount Ramsay, Badger Head, Mount Maurice.

82. „ Pyrites	4·1 - 4·3	3·5 - 4·0	Cop., Iron, Sulph.	Blue Tier, Mount Heemskirk, Badger Head, Beaconsfield, Arthur, Saxon's Creek, Scamander River, George's Bay.
83. Copper, Grey	4·5 - 5·2	3·0 - 4·0	Cop., Sulph., Iron, Ars., &c.	Mount Zeehan, Penguin.
84. „ Black Oxide	...	...	Ox., Cop.	Full Moon Co., Blue Tier.
85. „ Red Oxide	6	3·5 - 4·0	Ox., Cop.	Meredith Range.
86. „ [a]Blue and [b]Green Carbonate (Malachite[a], Chessylite[b])	3·7 - 4·0	3·5 - 4·0	Ox., Carb. Acid, Water	Mount Bischoff, Mainwaring Inlet, Junction of Arthur with Hellyer River, Mount Zeehan, Campbell Range, Mount Maurice.
87. Platinum	17·0 - 19·0	...	Platinum	Pieman River Gold Fields, St. Paul's River ?
88. Gold	15·0 - 19·0	2·5 - 3·0	Gold	Creeks from Cam to Port Davey, Mount Lyell, Macquarie Harbour, Pieman, King, and Whyte Rivers, Port Cygnet, Mangana, Mathinna, Mount Victoria, Lefroy, Back Creek, Lisle, Beaconsfield, Scamander River, Hampshire Hills, &c.
89. Silver	10·5	2·5 - 3·0	Silver	Mount Zeehan, Penguin, Mount Claude, Hampshire Hills, Scamander River, Constable's Creek, Arthur River, Mount Dundas, Savage River.
90. „ Sulphide	7·2	2·0 - 2·5	Silver, Sulph.	Scamander River ? Mount Bischoff, Heazlewood.
91. „ Antimonial and Arsenical Ores	5·0 - 6·0	2·0 - 3·0	Sil., Ars., Ant.	Penguin.
92. „ Horn	...	1·0 - 1·5	Sil., Chlorine	Heazlewood, Mount Dundas
93. Lead and Antimony Sulphides (Boulangerite)	2·5 - 3	5·75 - 6·0	Lead, Sulph., Ant.	Mount Zeehan, Mount Bischoff, Mount Ramsay, Penguin, Scamander River, Mount Dundas.
94. Selenides of Mercury (Onofrite)	7·1 - 7·37	2·5	Sel. Mer.	
95. „ Lead (Clausthallite)	7·6 - 8·8	2·5 - 3	Sel. Lead	
96. „ Silver (Naumannite)	8	...	Sel. Sil.	
97. „ Copper (Berzelianite)	7 - 7·5	...	Sel. Cop.	
98. Millerite, Sulphide of Nickel	...	3·0 - 5·0	Nick. Sulph.	Blue Tier, Penguin.
99. Rutile	4·2 - 4·3	6·0 - 6·5	Titanium, Ox.	Forth, Macquarie Harbour, Leven River, Savage River.
100. Sphene	3·2 - 3·6	5·0 - 5·5	Tit. Acid, Sil., Lime	
101. Wolfram	7·0 - 8·0	5·5	Tung. Acid, Iron, Mang.	Mount Bischoff, Blue Tier, Stony Creek, Ben Lomond, Pieman River, Ringarooma.
102. Pitchblende	6·4 - 6·7	5·5	Uranium, Ox.	
103. Osmo-Iridium	19·5 - 21·1	6·7	Os.-Ir., Iron, Rhod.	Badger River, Pieman River, Mount Granville.

CHAPTER VI.

Flora and Vegetable Products.

FLORA.

TASMANIA is famous for the extreme variety and beauty of its vegetation. No part of its natural history has received so much attention, and, mainly owing to the labours of such eminent botanists as Sir J. D. Hooker (Flora of Tasmania), W. Bentham, and Sir Ferd. von Mueller (Flora Australiensis), its history is comparatively better known than that of any other region of Australasia. Apart from its rich luxuriance in mosses, liver-worts, fungi, lichens, sea-weeds, &c., its flora comprises about 100 orders, 478 genera, and 1100 species, of which the following is a synopsis :—

Order.	Genera.	Species.	Types.
Dilleneæ	1	9	Hibbertia
Rutaceæ	5	18	Hickory, Boronia
Magnoliæ	1	1	Pepper Tree
Rhamnæ	5	15	Bastard Dogwood
Pittosporeæ	4	6	Box Tree
Tiliaceæ	2	2	Aristotelia
Leguminosæ	24	69	Coral Pea, Blackwood, Wattle.
Sapindeæ	1	2	Dodoneæ
Myrtaceæ	8	27	Blue Gum, Peppermint
Saxifrageæ	5	5	Horizontal Scrub, Native Laurel
Umbelliferæ	14	23	Prick-foot
Rubiaceæ	6	15	Coffee Plant
Compositæ	45	125	Musk Tree, Daisy
Stylideæ	4	6	Trigger Plant
Epacrideæ	16	60	Grass Tree, Heath
Ericeæ	2	4	Wax Cluster
Labiatæ	10	14	Native Lilac
Scrophulariaceæ	10	24	Eye-bright
Oleaceæ	1	1	Ironwood
Chenopodeæ	6	13	Salt Bush, Botany Bay Greens
Monimiaceæ	1	1	Sassafras
Lauraceæ	1	3	Native Mistletoe
Thymeleæ	2	18	Cotton Shrub
Corylaceæ	1	2	Beech or Myrtle
Proteaceæ	12	22	Honeysuckle, Waratah
Santaleæ	3	6	Cherry Tree
Casuarineæ	1	4	She-oak
Coniferæ	8	11	Huon Pine, Pencil Cedar
Orchideæ	22	66	Native Hyacinth, Spider Orchis
Liliaceæ	15	24	Grass Tree, Solomon's Seal
Junceæ	5	16	Rush, Sagg.
Restiaceæ	5	12	Restio.
Cyperaceæ	15	55	Cutting-grass
Gramineæ	34	67	Kangaroo-grass
Polypodeæ	25	51	Tree Fern
Lycopodeæ	4	10	Club Moss
Marsileæ	3	6	Pilularia
Other Orders	151	288	
Total	478	1100	

Natural Forests and Industrial Products.

Although the herbs, shrubs, and brushwoods have great interest for the naturalist, and although the foliage of our tree-fern gullies and the flowers and berries of the mountains and plains are remarkable for their beauty, it is the tall timber trees, spreading over the whole country—from the water-edge at sea-level to an altitude of 4000 feet—which give the chief character to the topography of the island. Tasmania is peculiarly a forest country. Trees of great dimensions tower over and eclipse all the lesser undergrowths on plains, valleys, hills, and mountain slopes. Of the 16,778,000 acres comprising the total area, there are only 75,500 acres occupied by lakes, and 488,354 acres of cultivated land only partially cleared of its timber trees. With the exception of minor areas on the tops of mountains or among the barren uplands of the Western Highlands, the whole of the rest of the country is occupied with an almost continuous virgin forest, mainly composed of the variable forms of Eucalypti (Gum Trees), one noted example of which, the Tolosa Blue Gum, has been recorded as measuring a height of 330 feet. Many of these trees have stems measuring 150 feet high without a branch, with a girth of about 40 feet towards the base ; and it is also recorded that a Blue Gum at Southport (*Eucalyptus globulus*)—the prevailing tree towards the south of the island—" contained as much timber as would fully suffice to build a ninety-ton schooner." (Mueller.)

With such a wealth of forest trees, Tasmania's sources of timber supply must be infinitely great, and, in the near future, must be of great industrial value. At present our very abundance is the cause of much prodigality and waste. The timber trees in large areas around settlement are mostly destroyed by fire when clearing the land.

The difficulties of transit, the ignorance of their economic value in distant markets, the plethora of local supply, and the necessity for clearing the land in the most convenient way, all tend to produce waste and improvidence in respect of timber products which might soon become a great source of national wealth. The necessity for the better conservation of our natural forests has latterly commanded the attention of the local government, and a department has been created for the purpose of establishing conserved areas and for regulating all matters connected with the cutting of timber on Crown lands. A brief description of the more important timbers of industrial value is given hereafter.

TIMBER TREES.

Hardwoods.

Blue Gum (*Eucalyptus globulus*—Lab.)—The " Blue Gum " has its home principally in the southern parts of Tasmania, where it attains great dimensions. Many of these trees exceed a height of 280 feet, with a girth of from 40 to 50 feet; and a noted example is mentioned whose height was estimated at 330 feet. Records of heights over 300 feet, however, require verification ; although it is not improbable that single trees in favourable localities may have attained the greatest height mentioned. " Lady Franklin's Tree," near Hobart, is stated to have a circumference of 107 feet at a height of 4 feet from the ground.

In any case, these trees commonly attain gigantic dimensions, and,

being so numerous, they may well share comparison with the notable examples of Sequoia of Southern California.

Sir Ferd. von Mueller has studied this now famous tree in all its relations, and he states that within the last 20 years not even the royal oak of England has such an extensive literature devoted to it as to our Blue Gum; and of these works he enumerates no less than 75, which of themselves would fill a large volume. The same authority states "that the timber is of a rather pale colour, hard, heavy, strong, and durable, more twisted than that of *E. obliqua*, *E. amygdalina*, and many other fissile kinds, but not so interlocked as that of *E. rostrata*, *E. melliodora*, and most of the species termed Box-trees. Its specific gravity varies from ·698 to 1·108. In transverse strain its strength is about equal to English Oak. Its durability is greater than the so-called White Gum trees and all Stringy-bark trees. In house-building it is one of our best timbers for joists, studs, rafters, or any other heavy scantlings, and is very largely used for this purpose. The Australian Lloyd's classify the Blue Gum tree as follows:—'For floors of ships, first and second futtocks, main and rider keelson, beams, and hooks, 10 years; for third futtocks and top timbers, stem and stern posts, transoms, knightheads, hawse timbers, aprons, deadwood, knees, rudder, windlass, timber and bilge-strakes and ceiling between, clamps, stringers, shelf-pieces and lower deck-waterways, 9 years; for light water-mark to wales, top-sides, sheer strakes, upper deck-waterways, spirkiting and plank sheers, 8 years; keel to first futtock heads, thence to light water-mark, 12 years (*i.e.*, first-class range).' The wood of the Blue Gum tree is also extensively used by carriage builders and manufacturers of implements; for instance, for poles and shafts of light as well as heavy vehicles, for under-carriage work, swivel-trees, spokes and rims, axle beds, plough-bars, handles of axes, picks, shovels, forks, hoes, and hammers, and all similar purposes." It is further used for telegraph poles, and for bridges, jetties, and railway sleepers, &c.

The classification of underwriters, however, is arbitrary,* and must not be taken as an indication of the true value or comparative durability or life of the Blue Gum timber. A large amount of information regarding its value for various purposes has been collected by Mr. Ellwood Cooper in his work "Forest Culture and Eucalyptus Trees," stated to be the only complete and reliable work on the Eucalypti published in the United States. The following extracts therefrom are therefore of more than ordinary value:—

Opinions of various Authorities.

Labillardière.—In his journal, dated 12th May, 1792, Labillardière writes:—"The wood is suited to naval construction, and is durable, but neither so light nor so elastic as Pine."

* This is confirmed by letters written in 1851 to the late Dr. Milligan by W. W. Saunders, of Lloyd's, London, who aided Dr. Lindley and Dr. Royle, &c. in examining and reporting upon the timbers shown at the Great Exhibition held in London in the year 1851. He writes:—"Ships built in colonies I think very well of as regards timber, feeling eventually some of the best woods will prove worthy of being admitted into the ships of the first grade. At present the better class woods are only admitted to stand A1 for 10 years, and are placed *for want of experience in them*, on the footing of hardwoods from Brazil and elsewhere."

M. Trottier, a colonist and planter, writes:—"The trunk can supply immense planks. One was sent to the London Exhibition in 1862 measuring 75 feet in length and about 10 feet in width. Australia desired to send a plank one hundred and sixty-five feet long, but no ship could be found to transport it. The English navy begins to appreciate the wood for its solidity, durability, and tenacity. The best whaleships that furrow the South American seas are those of Hobart Town; the keels of which are made of *Eucalyptus globulus*. . . . Compact and tenacious, the wood, owing to the presence of resinous materials, possesses a sort of incorruptibility which allows it to remain a long time in contact with salt water. It is equally durable in the ground as is the Oak, and can be employed with advantage for sleepers for railroads. The durability of the wood makes it valuable for the keels of vessels, for the construction of bridges, piers and viaducts."

Baron Ferd. von Mueller—"Shipbuilders get keels of this timber one hundred and twenty feet long; besides this, they use it extensively for planking and many other parts of the ship, and it is considered to be generally superior to American Rock Elm. A test of strength has been made between some Blue Gum, English Oak, and Indian Teak. The Blue Gum carried fourteen pounds weight more than the Oak, and seventeen and one-fourth pounds more weight than Teak, upon the square inch."

Mr. T. W. Herkimer.—This gentlemen (who lived ten years in Australia and Tasmania, engaged in mining, wood-cutting, lumbering, constructing telegraph lines, &c.) writes:—"While I was in Tasmania there was a test made as to the value for war purposes. It was found that a cannon-ball would pierce the planks, cutting a round hole, and passing through without splitting the planks. The experiments were so satisfactory that the wood was pronounced as good as English Oak. . . . The timber dealers in Melbourne do not make a difference in contracting for a cargo of lumber of colonial woods. *It is generally expected that it will be mixed.** Wheelwrights always select the Blue Gum, it being considered much better for wagon-making than most other varieties; it is stronger and more durable, and quite equal to the Hickory of this country (America). It is used for axle-trees, hubs, spokes, and all parts of the running gear. The Blue Gum is much heavier and tougher, and will last longer than any of the others; *in fact, it will last a life-time if taken from large trees.** The wood resembles the Rock Elm of the Eastern States (of America)."

J. Higginbotham.—"The fence-posts (for Victoria Railways) will be of Red Gum, Iron Bark, Blue Gum, or Box, and the Rails of Stringy Bark. I think that a fence of these materials *will last for eighteen years.*"

Experiments on the strength of Blue Gum Timber, instituted by Mr. James Mitchell, gave the following results, as tested in pieces 7 feet long by 2 inches square—

* The mistakes made in selecting true specimens, or the selection of timber for tests made from young trees or unseasoned examples, may be the chief causes of marked differences shown in trials of strength, durability, &c. made at different times and places by different persons.

	Imperfectly seasoned examples.	Well seasoned examples.
Deflection—Weight and deflection while the elasticity remained perfect—		
Weight ..... lbs.	294 to 503	472 to 518
Deflection ..... inches	1·37 to 1·5	1·37 to 1·75
At crisis of breaking ..... „	5· to 7·5	4· to 7·5
Total weight to break each piece ... lbs.	819 to 867	1029 to 1330
Value of strength $S = \frac{lw}{4bd^2}$	2149 to 2276	2701 to 3491
Tensile strength = direct cohesion per square inch	...	22,064 to 31,088
Specific gravity	1·034 to 1·076	·942 to 1·089

Mr. Laslett also found vertical or crushing strain on cubes of 2 inches, as follows :—

Vertical strain on 2 in. cubes, from	10·50 tons to 13·62 tons
Ditto mean per 1 square inch	3·078 tons

In a further series of experiments instituted by Sir Ferd. von Mueller and J. G. Luehmann on Pieces of Blue Gum 2 feet long and 2 inches square, seasoned for nine months, the following results were obtained as regards transverse strength :—

Deflection—With the apparatus weighing 780 lbs. ..... inches	0·5 to 1·6
After weight was removed ..... „	*Nil* to ·04
At the crisis of breaking ..... „	·58 to ·75
Total weight to break each piece ..... lbs.	2280 to 3752
Strength = $\frac{\text{length} \times \text{weight}}{4 \times \text{breadth} \times \text{depth}^2}$ multiplied by itself	1689 to 2814
Specific gravity	·845 to 1·096

Further experiments upon various indigenous timber-trees of Tasmania and Australia were made by Sir Ferd. von Mueller and J. B. Luehmann under the same conditions as the last-mentioned, which enable comparisons to be made with woods of various countries. To these are added quotations of Strength (S) from Chambers' Mathematics, and Molesworth's Pocket Book of Engineering.

TIMBER-TREES of Tasmania and Australia compared with those of other Countries.

	Deflection.		Breaking Weights.	Strength, $S = \frac{L\,W}{4BD^2}$	Specific Gravity.	
	Pressure, 780 lbs.	Breaking Crisis.			Air-dried.	Absolutely dried.
* Blue Gum *(Eucalyptus globulus)*	·16	·75	3752	3491	1·096	...
	·05	·58	2280	2149	·845	...
* Stringy-bark *(E. obliqua)*	...	...	...	3602	·81–·100	...
Lignum vitæ	...	...	...	3440	1·333	...
Satin Wood	...	...	...	3200	·960	...
* Iron Bark *(Eucalyptus leucoxylon)*	·03	·63	4192	3144	1·028	·908
	·03	·60	3977	2983	1·061	·913
Satin Wood	...	...	...	3200	·960	...
Iron Wood	...	...	...	3000	1·150	...
Ash	...	...	...	3000	·760	...
	...	...	...	2000	·690	...
† Sydney Iron Bark *(Eucalyptus siderophloia)*	·02	·63	3873	2905	1·075	·936
	·02	·56	3752	2814	1·129	·953
Oak, African	...	...	...	2523	·988	...
† Red Box *(Eucalyptus polyanthema)*	·10	·56	3215	2411	1·248	1·031
	·08	·58	3145	2359	1·214	1·010
Box	...	...	...	2445	1·280	...
Teak	...	...	...	2460	·740	...
	...	...	...	2110	·860	...
Oak, English	...	...	...	2260	·777	...
	...	...	...	1200	·934	...
† Yellow Box *(Eucalyptus melliodora)*	·06	·58	2903	2177	1·112	·947
	·08	·63	2781	2086	1·040	·846
Ebony	...	...	...	2100	1·187	...
† Pale Red Gum (*Eucalyptus rostrata*)	·08	·52	2781	2086	1·008	·843
	·07	·48	2712	2034	·940	·790
Birch	...	...	..	1930	·711	...
	...	...	...	1900	·730	...
Elm, Canadian	...	...	...	1920	·725	...
Mahogany, Honduras	...	...	..	1910	·560	...
Acacia	...	...	...	1867	·710	...
Jackwood	...	...	...	1830	·670	...
† Stringy Bark Gum *(Eucalyptus macrorrhyncha)*	·17	·62	2412	1809	·952	·800
	·17	·60	2384	1788	1·060	·901
*(Var.) Swamp Gum *(Eucalyptus Gunnii)*	·12	·75	2327	1745	·950	·802
	·14	·75	2268	1701	1·021	·842
* Apple-scented Gum *(Eucalyptus Stuartiana)*	·12	·54	2425	1819	1·010	·850
	·14	·56	2170	1627	1·001	·834
* White Gum *(Eucalyptus viminalis)*	·12	·65	2384	1788	·954	·797
	·12	·70	2195	1646	·916	·761
Oak, Canadian	...	...	...	1760	·850	...
Chestnut	...	...	...	1770	·660	...
* Blackwood *(Acacia melanoxylon)*	·08	·50	2296	1722	·616	...
	·08	·54	2261	1696	·615	...
Mahogany, Nassau	...	...	...	1719	·668	...
Oak, American Red	...	...	...	1680	·850	...
† Bastard Box Gum *(Eucalyptus goniocalyx)*	·16	·50	2209	1658	·948	·807
	·20	·58	2050	1537	·937	·798
Larch, English	...	...	...	1660	·556	...
	...	...	..	1330	·543	...
* Peppermint Gum *(Eucalyptus amygdalina)*	·12	·65	2195	1646	1·045	·978
	·12	·70	2132	1599	1·076	·867

* Tasmanian Trees. † Australian Trees.

	Deflection.		Breaking Weight.	Strength, $S = \frac{L W}{4BD^2}$	Specific Gravity.	
	Pressure, 780 lbs.	Breaking Crisis.			Air-dried.	Absolutely dried.
Maple	...	...	...	1694	·675	...
Deal, Christiana	...	...	...	1562	·689	...
†Kauri *(Dammara Australis)*	·08	·42	2053	1540	·600	·518
	·08	·42	1967	1475	·613	·531
*Messmate Gum *(Eucalyptus obliqua)*	·12	·50	2053	1540	1·045	·867
	·14	·48	1776	1332	·935	·783
Red Pine	...	...	...	1530	·657	...
	...	...	...	1200	·576	...
Fir Spruce	...	...	...	1490	·512	...
Cedar, West Indian	...	...	...	1443	·748	...
Pine, Dantzic	...	...	...	1426	·649	...
Baltic Deal *(Pinus sylvestris)*	·17	·70	1811	1358	·541	·458
	·21	·48	1398	1048	·399	·346
Pine, Riga	...	...	...	1383	·634	...
Pine, Memel	...	...	...	1348	·550	...
Cedar, Lebanon	...	...	...	1300	·486	...
Elm, English	...	...	...	1100	·579	...
	...	...	...	782	·553	...
Cedar, American	...	...	...	766	·554	...

From the preceding analytical tables it will be seen that the Tasmanian Blue Gum stands pre-eminent among the woods of all countries in regard to strength; bearing nearly five times the strain of the lowest on the list—viz., American Cedar.

There is every reason to believe, therefore, that it will be largely in demand when its valuable properties become better known in European markets.

Besides its timber it has many other valuable properties. Sir Ferd. von Mueller states: "Our Blue Gum has, on the whole, exercised already on regions of the warm temperate zone (where they have been introduced) a greater influence—scenic, industrial, and hygienic—than any other single species of arboreous vegetation ever reared anywhere. Thus (as in Algeria) it has transformed the features of wide formerly treeless landscapes, has already (from its quick growth) afforded many places timber and fuel for rapidly increasing settlement, and rendered also many a miasmatic locality permanently habitable. . . . To bacteria and other micro-organisms Eucalyptus oil proves as fatal as Phenic acid. . . . Flesh of any kind is as well preserved by Eucalyptus oil as by Creosote, while beef sprinkled with it will dry hard without putrefaction. Various parts of the wood yields from 1 lb. 5 oz. to 4 lbs. 12 oz. of pure potash, while valuable oils (Eucalyptus) are yielded by the leaves and other parts, which are now largely in use by pharmacopolists generally." For further particulars regarding the various properties of this famous tree, see Sir Ferd. von Mueller's "Eucalyptographia," [Melbourne, 1884].

Peppermint Tree *(Eucalyptus amygdalina*—Lab.)—This magnificent tree has a wide range, as it is found along the southern and

eastern humid districts of Victoria and New South Wales, as well as in Tasmania. It varies greatly with altitude, climate, and soil, and is found at all heights up to 4000 feet elevation. In the poorer lands, open country, or on dry ridges or plateaus, the trees, though tall, are not remarkably so; but in the deep-wooded gullies and in the moist ravines of mountains, it attains such remarkable dimensions that it has obtained the distinction of "The Giant Eucalypt" of Australia.

The giant form in Tasmania is known as the "Swamp Gum Tree"; the name "Peppermint Tree" is locally restricted to the smaller varieties on open plains and ridges. The following account, given by the Rev. T. J. Ewing, of trees growing near a small stream running into North-West Bay River, in 1849, gives some notion of the remarkable dimensions attained by the Swamp Gum in moist situations:—"In addition to the giants below, there are . . . within a mile at least 100 trees of 40 feet in circumference. One, about forty yards from the biggest, was 60 feet at four feet from the ground, and at a hundred and thirty must have been fully 40 feet in circumference; it was without buttresses, but went up one solid massive column, without the least symptom of decay. A Silver Wattle (*Acacia dealbata*) was 120 feet high and six feet round. The largest (Swamp Gum) we measured was, at three feet from the ground, 102 feet in circumference, and at the ground 130 feet. We had no means of estimating its height, so dense was the neighbouring forest—above which, however, it towered in majestic grandeur. This noble Swamp Gum is still growing—it should be held sacred as the *largest* growing tree. . . . The second tree, also a Swamp Gum, is prostrate. It measures from the root to the first branch 220 feet, and the top measured 64—in all 284 feet, without including the small top decayed and gone, which would carry it much beyond 300 feet. The circumference at the base is 36 feet, and at the first branch 12 feet, giving an average of 24 feet. This would allow for the solid bole 10,120 feet of timber, without including any of the branches. Altogether, as green timber, it must have weighed more than 400 tons. The Oak that gave the most timber was the Glenonos oak, in Monmouthshire, which, with its branches, turned out 2426, but the body alone only 450 feet."

In Victoria, on the Black Spur, Upper Yarra and Upper Goulburn River, several trees measured by Sir Ferd. von Mueller gave approximately heights of 400 feet. Mr. Howitt also obtained, in Gippsland, measurement of giant forms up to 410 feet. Still greater heights are recorded; but enough has been stated to prove that the species must be ranked with the Sequoias of California and the locally associated Blue Gum of Tasmania as among the great giants of the vegetable creation.

In regard to its qualities and uses as timber, Sir Ferd. von Mueller states that it is useful for many kinds of carpenter's work; in drying it does not twist; when straight stems are produced in forest-valleys the wood splits better into palings than even that of our Stringy-bark Tree (*E. obliqua*), and this with such facility that in some particular instances a labourer has split 620 palings of 5 feet length in one day. The timber is comparatively not heavy, as it floats in water, unlike that of many other Eucalypts; it is particularly well adapted for shingles,

palings, and rails, and also drawn into use for shipbuilding, especially keelsons and planking.

Besides its timber, the tree is famous for other products of value. Mr. Bosisto has shown that the ashes of the foliage yields 10 per cent. pearlash, and that from 1000 lbs. of fresh leaves, with their stalklets and branches, the yield of Eucalyptus oil by far surpasses all that of other congeners, amounting to as much as 500 ounces per 1000 lbs., or 3·12 per cent. The following table of yields obtained by Mr. Bosisto is quoted by Sir Ferd. von Mueller in his "Eucalyptographia" :—

Per 1000 lbs. of leaves, stalklets, and branches—

Eucalyptus	viminalis	yields	7	ounces of	Eucalyptus Oils.
,,	melliodora	,,	7	,,	,,
,,	rostrata	,,	15	,,	,,
,,	obliqua	,,	80	,,	,,
,,	globulus	,,	120	,,	,,
,,	goniocalyx	,,	150	,,	,,
,,	leucoxylon	,,	160	,,	,,
,,	oleosa	,,	200	,,	,,
,,	amygdalina	,,	500	,,	,,

It is mainly on account of this large yield of febrifugal properties that many give preference to the Peppermint Gum for plantations in any paludal fever region ; its only drawback being that it does not grow so rapidly as the Blue Gum, nor does it so readily accommodate itself to diversity of soils. It is hardier, however, and it has been known to grow a height of sixty feet in nine years.

Stringy-bark Gum (*Eucalyptus obliqua*—L. Her.)—This valuable tree is also widely distributed, bing found in abundance in Victoria, South Australia, and Tasmania. It is straight-stemmed, of rapid growth, attaining a maximum height of 300 feet. In Tasmania it ascends high, but short of alpine elevations, occupying mountain-ranges, also occasionally on heathy ridges.

Sir F. von Mueller truly remarks that it "is one of the most important of all our trees in regard of its abundance (being the most gregarious of any of our forest trees), and on account of the ease with which the wood is worked. It supplies a large portion of the ordinary sawn hard-timber for rough building purposes ; being very fissile, it is also extensively split into fence-rails, palings, and shingles. It is light-coloured. The specific gravity of the wood varies from 0·809 to 0·990, or from 50 to 60½ lbs. per cubic foot. Mr. F. Campbell found the tensile strength per square inch equal to a pressure of 8200 to 8500 lbs."

Mr. Ransome also reports favourably of its timber as follows :— Stringy-bark (*Eucalyptus obliqua*).—A very strong tough wood, with a straight grain, in appearance somewhat resembling American ash. From its great strength and toughness it is well adapted for carriage, cart, and waggon building, wheelwork and agricultural machinery, as well as for the framing of railway carriages and trucks. It is also a valuable wood for the stronger descriptions of building constructions, and would make excellent railway sleepers. From the peculiar strength of the fibre of the grain it will not maintain a good surface ; as even when perfectly dry the grain rises so as to render it impossible to polish it successfully.

The test of strength gives the highest results, being equal to the best Oak; thus:—pieces tried, 1″ × 1″ × 30″; distance between bearers, 24″. Deflection at breaking point, $\frac{7}{8}$-inch, breaking weight, 602 lbs., = (S) $\frac{LW}{4BD^2} = 3602$.

The bark of this tree is locally used for roofing bush-huts, and probably it was the bark of this tree that was used by the aborigines for making their rafts. Sir Ferd. von Mueller has shown that the bark is suitable for the manufacture of paper; not only for packing, mill, and paste-boards, but also for printing and writing. The utility of this tree, therefore, is very great.

White Gum—Manna Tree (*Eucalyptus viminalis*—Lab.)—This tree is abundantly distributed throughout the island, and also has a wide distribution in the mainland of Australia. In open country it is of middle size, or not a very tall tree as compared with its congeners. In favourite situations, however, in deep forest glens among other Eucalypts, this tree rises to a very great height. Sir F. von Mueller states that one of them, in the Dandenong Ranges, was measured by Mr. D. Boyle and found to be 320 feet high, and had a stem base of 17 feet in diameter. These dimensions, however, are most extraordinary. The timber varies from light to dull brick color. Sir Ferd. von Mueller has also given many interesting particulars with respect to its properties and uses. The timber from straight stems is employed for shingles, rails, and also rough building material. It is not so durable as the wood of many other kinds of Eucalypts, but stronger than that of *E. amygdalina* and *E. obliqua*. Mr. Boyle found boards, of $\frac{1}{2}$-inch thickness, sawn from the tall-stemmed smooth variety of moist forest glens, to last twice as long as pine boards of 1-inch thickness. The stems of this variety are of an almost uniform thickness up to a great height, and mast-like in straightness. When so chosen the wood is pale and compact, and does not warp. Its timber makes good fuel. The smaller branching trees on open ridges and plains are noted for exuding a sugary substance called "manna," which is esteemed a great luxury, and eagerly sought for by the young.

Gum-topped Stringy-bark (*Eucalyptus hæmastoma*—Smith.)—Although this valuable timber tree has long been familiar to saw-mill proprietors and splitters, it was in Tasmania overlooked by botanists until brought into notice by Mr. T. Stephens in the year 1881. Neither the description of the tree nor its timber based upon an Australian variety can be relied upon as correct, especially so as regards the industrial value of the timber of Tasmanian kinds. The Australian variety is stated by Sir Ferd. von Mueller to produce timber of inferior value. The Tasmanian variety is held in high esteem. Mr. Stephens states that "the chief peculiarity of this tree (in Tasmania) is that while the lower part of the butt is clothed with a thick fibrous bark closely resembling that of the common stringy bark (*E. obliqua*), the upper part and the smaller limbs and branches are quite smooth; whence its popular name. The timber is highly prized by splitters, and for general

purposes it is described by many competent authorities as second only to the Blue Gum, though opinions seem to differ as to its durability. It is found in most parts of the Colony, and appears to grow as freely on the table land of the interior, reaching an altitude of not less than 3000 feet above the sea, as along the coast line." Mr. C. H. Grant states "that it is a valuable timber. He had (for railway purposes) been supplied with a large number of sleepers from the Huon River. The timber has a different shade of color to Stringy Bark and to White or Swamp Gum, and also a different grain, which more closely resembles that of Blue Gum. It is a close, heavy timber, remarkably free from knots."

Particulars regarding systematic tests of strength, transverse and tensile, have not yet been furnished as regards this valuable Tasmanian variety.

Iron-bark (*Eucalyptus Siberiana*—Mueller).—This valuable tree, attaining a height of 150 or more feet, is common in alpine and sub-alpine situations in Victoria and New South Wales. In Tasmania it is, so far as presently known, restricted (though there frequent) to the granitic coast ridges and in valleys of rather sandy or stony soil, as well as on slate-hills from Falmouth to George's Bay, occurring also on hills of the sandstone formation north of St. Mary (Simson) and on East Mount Field, at elevation from 1000 to 1500 feet.

Sir Ferd. von Mueller states that "the trunk is sawn into good timber, and it is also used for posts and rails; wood, among other purposes, recommended for shafts; it resembles much more that of our Blue Gum than that of our Stringy-bark trees; it is hard, and, when seasoned, difficult to cut, but burns well even when fresh." Mr. A. W. Howitt finds the wood of superior quality, light, tough, and elastic, used for swingle-trees of buggies, ploughs, &c., but it will not endure underground.

Red Gum (*Eucalyptus Stuartiana*—Muell.)—This tree is common near Southport, but more widely distributed in south-eastern ranges of Australia. When well grown it attains a middle size, seldom reaching 100 feet in height. Stems oftener twisted than straight. The wood is stated to be hard, but does not split well: it is used for fence-posts, and it is very durable; sometimes used for rough sorts of furniture, as it takes polish well. It is known as "But-But" in Gippsland.

Cider Gum (*Eucalyptus Gunnii*—Hooker).—This tree is very common in alpine situations in Tasmania, as well as in similar situations in Victoria and New South Wales. Under favouring conditions it attains a height of 250 feet, but usually not tall, often crooked or much branched. Wood hard, very good for many purposes of artisans. Does not split well; good for fuel. The tree is noted for yielding a sap of a not unpleasant taste, which is sometimes converted into a kind of cider by bush people—hence the common name.

It does not yield so much kino-tannin as the other large Eucalypts, as indicated in the following quotation from Sir Ferd. von Mueller's Eucalyptographia:—*E. amygdalina*, 3·22-3·40; *E. globulus*, 4·84; *E. goniocalyx*, 4·12-4·62; *E. leucoxylon*, 21·94; *E. macrorrhyncha*, 11·12-

13·41; *E. melliodora*, 4·03; *E. obliqua*; 2·50-4·19; *E. polyanthema*, 3·97; *E. rostrata*, 8·22; *E. viminalis*, 4·88-5·97.

Weeping Gum (*Eucalyptus pauciflora* — Sieb.)—This hardy branching gum is of medium size, although sometimes attaining a height of 100 feet. In the Australian and Tasmanian Alps it is the prevailing tree, maintaining its existence in a dwarfed state to nearly the snow-line. The branchlets are more or less pendulous, and this singular habit among gum trees gave to it its common name. The timber is comparatively soft and easy to cut; has a lighter colour than most of its congeners; it splits fairly, though rather brittle and short in the grain; commonly used for log fences and for fuel.

Mueller's Gum (*Eucalyptus Muelleri*—T. B. Moore).—A new variety of Eucalypt has recently been discovered by Mr. T. B. Moore, named by him in honour of Sir Ferd. von Mueller), may here also be noticed, as it is stated to be a valuable timber tree.

In a splendid forest (all of this variety) between the Huon and Derwent water-sheds, the trees at 2000 feet elevation attain a height of 200 feet, their straight stems rising 100 feet without a branch. Mr. Moore states that the wood is of a light red color, extremely hard and surprisingly heavy, and is of a stringy and close-grained character. He further is of opinion that the timber will vie with the Blue Gum in durability and in other important respects. Sir F. von Mueller considers that this new form is allied to *E. cordata*, *E. uringera*, and *E. vernicosa*, which also exist in Tasmania.

There are three other species of Gums (*E. coccifera*, *E. cordata*, and *E. Risdoni*), but they are small or dwarf forms, and are of no particular industrial value.

Blackwood: Lightwood (*Acacia melanoxylon*—Br.)—This forms one of the most handsome of our native trees, and is widely distributed throughout the Colony, especially along the slopes of the North-West Coast. It attains a height of from 60 to 130 feet. Diameter, 1½ to 4 feet; average diameter, about 2¼ feet. According to age and diversity of soil it varies somewhat in appearance and in the character of its timber. The dark-reddish wood, with a beautiful wavy grain, termed Blackwood; the reddish variety, Pencil Cedar (an unfortunate term, as there is a native Pine bearing this name also); and the lighter-shaded varieties, Lightwood. The specific gravity of these woods is about ·885.

Mr. Ransome also examined these woods, and reports as follows:—

"Blackwood (*Acacia melanoxylon*).—A sound mild-working timber of brownish colour, closely striped with streaks of various shades of a reddish brown, and frequently crossed by diagonal marks of a light golden colour. The more ornamental logs of this wood are exceedingly beautiful, and should fetch a high price in this market, where they could be used to advantage in place of the best Honduras mahogany, while the less ornamental logs would serve for the higher class of joinery work, such as counters and other shop fittings. The younger growth is well suited for cooperage work, and a barrel made from one

of the pieces submitted for trial before being artificially seasoned is still quite tight, and shows no sign of shrinkage.

"Lightwood (*Acacia melanoxylon*).—This is an inferior description of blackwood, from which it differs mainly in being of a lighter colour, and having a somewhat more open grain. Although it will not compete with the blackwood for highly ornamental cabinet work, it could be used in the place of cheap mahogany for wardrobe backs and other similar work.

"Pencil Cedar (*Acacia melanoxylon*).—This, like the Lightwood last described, is very similar in grain and growth to the Blackwood, and the fact that the same Latin name of *Acacia melanoxylon* is common to this and to the two woods last described is sufficient evidence that they are varieties of the same tree. If Pencil Cedar could be imported into this country at a price that would enable it to compete with the cheaper descriptions of mahogany and cedar, it would meet with a ready sale for the purposes for which these woods are now almost exclusively used."

The test of transverse strength, under the same conditions as the Beech, gave the following excellent results:—

	Deflection at Breaking Point. inches.	Breaking Weight. lbs.		$(S)\frac{LW}{4BD^2}$
Blackwood.....	$1\frac{3}{4}$	518	=	3108
Pencil Cedar*	$1\frac{7}{8}$	476	=	2856
Lightwood.....	$2\frac{1}{8}$	378	=	2268

This shows that these woods far surpass the best mahogany in strength. Locally, the more ornamental forms of blackwood are largely used for furniture, ornamental panelling, &c.; also for railway passenger carriages, wagons, cooperage, and billiard tables. It seems a pity that such beautiful woods should be so largely devoted to inferior uses.

Myrtle or Beech—Red and White (*Fagus Cunninghami*—Hook.)—This valuable Beech tree is common, especially in the mountainous and humid districts of western Tasmania, where it forms a large proportion of the forest, ascending to 4000 feet elevation, where it is dwarfed to a shrubby condition. In the 1500 to 2500 levels it attains a great height, sometimes reaching 200 feet, with a girth of 40 feet. The diameter of the average individual, however, ranges about $3\frac{1}{2}$ feet. There are two well marked varieties. The Red and White, both excellent woods as regards strength, but the Red variety is more prized for its more attractive colour when worked up; specific gravity, ·795. In Mr. Ransome's recent experiments on Tasmanian woods, the qualities of both varieties are highly commended, as follows:—

"Red Myrtle (*Fagus Cunninghami*).—A sound mild-working wood of a bright pink colour, resembling English Beech in grain, and could be used to advantage for all the purposes for which the best Beech is employed in this country, while its superior appearance would enable it to take the place of the cheaper kinds of Mahogany in wardrobes and other cabinet work.

* The name *Cedar acacia* would be more appropriate.

"White Myrtle (*Fagus Cunninghami*).—This wood closely resembles the Red Myrtle last described in texture and grain, but differs from it in colour, having a brownish grey tint. Like the Red Myrtle, it could be used for all the purposes for which the best English Beech is employed, but its somewhat dull and unattractive colour would preclude its being used as a substitute for Mahogany."

From the test of strength made by Mr. Ransome (pieces experimented being 1 inch square by 30 inches long; distance between bearers 2 feet), the following results were obtained:—

	Deflection at breaking point.	Breaking weight.		$(S) = \frac{LW}{4BD^2}$
	inches.	lbs.		
Red Myrtle	$1\frac{7}{8}$	452	=	2712
White Myrtle	$1\frac{3}{8}$	459	=	2754

In Molesworth's Pocket Book of Engineering Formulæ, the transverse strength (S) = of English Beech is stated at 1500 to 2000, and Mahogany—Nassau, 1719; Spanish, 1300; Honduras, 1910. It would appear, therefore, that the Tasmanian Beech is much stronger, rivalling that of the best Ash timber.

Huon Pine (*Dacrydium Franklinii*—Hook.)—This is the grandest and most useful of all our Tasmanian soft-woods. It is abundant along the rivers of the south-western parts of the Island, attaining a height of from 60 to 120 feet, with a diameter from 3 to 8 feet—average, 4 feet. Its timber is almost indestructible in any situation, withstanding the attacks of the teredo in water, and of insects and other parasites on land. It is largely employed locally for all kinds of furniture, ornamental work, and is the most highly esteemed of all kinds of wood for the lighter sea-craft. Its qualities are thus reported upon by Mr. Ransome:—"Huon Pine.—This is a beautifully sound and mild-working wood of a light straw colour. As it is very easily worked, and frequently has a very ornamental grain, it is well adapted for first-class joinery work, making beautiful panels and mouldings, and the better figured logs should meet with a ready sale in this country for furniture and cabinet work. As it is somewhat brittle and breaks under a comparatively small strain, it is not suitable for joists, beams, or the heavier descriptions of builders' work, and as it could not be imported into this country at a price which would compete with American Pine, its sale in England would be limited."

Its transverse strength is given as follows:—

$(1'' \times 1'' \times 24'')$

Deflection at breaking point	$1\frac{1}{4}$ inches
Breaking weight	203 lbs.
$S = \frac{LW}{4BD^2}$ equals	1218 lbs.

This is above the average strength of the various Pine timbers so largely used in England.

Mr. Bradley also reports favourably of its great durability, and adds, that iron imbedded in its timbers (even when under water for many years) is most effectually preserved from decomposing agencies.

King William Pine (*Athrotaxis cupressoides*—Don.)—This excellent Pine is confined to the alpine valleys in the neighbourhood of Lake St. Clair, Mount Arrowsmith, Western Mountains, Collingwood Valley, King River, and elsewhere on the West Coast, attaining to a height of from 60 to 80 feet, and a diameter of 30 inches in favourable localities. The regions where it grows are not easily accessible, and hence it is seldom seen in the market. It is very durable, and splits fairly and readily, and on this account it is much prized by miners on the West Coast for building huts. It is used also for light spring carts and for parts of carriage work.—(Bradley.)

Red Pine (*Athrotaxis selaginoides*—Don.)—This Pine is similar in habit to the last mentioned, but rarely attains to so great a height. It occurs on the Western Mountains, Mount Field East, Port Davey, and other places in the south west. Its timber has usually a deeper tone of red, but in all other respects corresponds very closely with *A. cupressoides*. There is another species called the Mountain Pine (*A. laxifolia*—Hook) on the Western Mountains, which is not so important for industrial purposes, being practically a more dwarfed variety of *A. selaginoides*.

Oyster Bay Pine (*Callitris cupressiformis*—Vent., or *Frenela rhomboidea*—Endl.—This remarkable pine is restricted to the East Coast, between Spring Bay and Bicheno. It usually attains a height of 60 feet, sometimes as high as 80 feet; diameter at butt about 18 inches. "The smaller pines are locally used for rafters to buildings, also for oars, masts, and yards for boats. The larger trees are sawn into boards for building purposes—indeed they do well for all the internal fittings of a house, including staircases, sashes, and doors. The boards shrink little in drying, and rarely warp while seasoning. I have had doors, floors, sashes, &c. that have had upwards of 20 years' wear, and judging from their appearance the timber must be very durable."—(Francis Cotton).

This tree also yields the true Sandarach or Gum Juniper of commerce. Settlers in the Oyster Bay district, by making incisions in the stem to stimulate the flow of the fine pale resin at certain periods of the year, might find much profit from its collection. This resin is one of the most useful ingredients in varnish, increasing in hardness and glossiness.

Celery-top Pine (*Phyllocladus rhomboidalis*—Rich.)—This is a most peculiar type of pine, with curious leaf-shaped branchlets of a cuneate or rhomboidal form. It is commonly found in mountainous regions, particularly in the southern and western parts of the Island. It is a slender tree, attaining a height of 60 feet, but reduced to a shrub on high mountains. The wood is tough and heavy, but useful for field gates and such like purposes, and is much prized for masts of boats.

Silver Wattle (*Acacia dealbata*—Lab.)—Forms a beautiful umbrageous tree; has a rapid growth, and attains a height of from 60 to 120 feet, with a diameter of from 1½ to 2½ feet; specific gravity, ·965

Its wood is extremely hard and tough, and is well adapted for cask-staves, tree-nails, and other like purposes. It lasts better than any other timber in salt water, resisting the attacks of teredo, and in this respect it is specially suitable for marine buoys, &c. The wood has a beautiful banded red and white colour, and takes a fine polish.

Black Wattle (*Acacia mollissima*—Willd).—Almost similar to the last-mentioned in all respects, but its foliage lacks the silvery appearance of its congener. Both trees grow abundantly throughout the Island, and their bark, being highly esteemed for tanning purposes, is exported in large quantities. The Black Wattle bark is esteemed the best.

Mr. F. Bond, of Hobart, states that the yield of tannin properties in the two Tasmanian species, as indicated by the Barkometer, is as follows:—Silver Wattle, 10–16 points; Black Wattle, 25–31 points. Silver Wattle, ground, in bags, averages (1889) £3 to £4 per ton; Black Wattle averages £8 to £8 10s.

Iron Wood (*Notelea ligustrina*—Vent.)—A small tree, from 20 to 35 feet in height, found commonly throughout the Island. Its wood is exceedingly hard and close-grained, reddish colour, and takes a high polish. This beautiful wood is well adapted for mallets, sheaves of blocks, and turnery. Sp. gravity, ·965.

Native Cherry (*Exocarpus cupressiformis*—Lab.)—This singular cypress-like tree is common in the eastern parts of the Island, and attains a height of from 20 to 30 feet, with a diameter from 9 to 18 inches. It has a good appearance when worked up, and is well suited for tool-handles, gun-stocks, spokes, &c. Sp. gravity, about ·790. Takes a fine polish.

Woods suitable for Turnery.—The following trees, mostly attaining a height of from 20 to 30 feet, are well suited for turnery purposes:—

Native Pear (*Hakea lissosperma*—Br.)
Scentwood (*Alyxia buxfolia*—Br.), odour similar to Finger Bean.
Swamp Tea Tree (*Melaleuca ericifolia*—Sm.)
Pinkwood (*Eucryphia Billardieri*—Spach.)
* Native Box (*Bursaria spinosa*—Car.)
* White Wood (*Pittosporum bicolor*—Hook.)

Horizontal Scrub (*Anodopetalum biglandulosum*—Cunn.)—A shrub or tree attaining to a height of from 50 to 60 feet, with a diameter from 8 to 12 inches. This is the scrub which proves such a barrier to explorers in the Western Highlands, from its habit of forming interminable interlacing thickets among other trees. Its wood is exceedingly hard, supple, and tough, and would no doubt take the place of American Hickory in many uses, such as in coach-work, tool-handles, light frame chairs, &c.

* These woods have been used successfully for wood-engraving.

Ornamental Woods.*—The following comprise the various trees which are in high esteem for the beauty of their grain and varied colouring; all taking a good polish. They are eminently adapted for ornamental work, veneers, &c. :—

Blackwood (*Acacia melanoxylon*), wavy varieties.
Huon Pine (*Dacrydium Franklinii*), knotted parts.
She-oak† (*Casuarina quadrivalvis*).
He-oak† (*Casuarina suberosa*).
Musk Wood (*Aster argophylla*), root bole.
Native Laurel (*Anopterus glandulosus*).
Blue Gum (*Eucalyptus globulus*), curly-grained variety.
Peppermint (*Eucalyptus amygdalina*), wavy-grained variety.
Myrtle (*Fagus Cunninghami*), knotty parts of bole.

Trees and Plants yielding Fibrous materials :—

Currajong (*Plagianthus sidoides*—Hook.), bark of shrub.
Lyonsia (*Lyonsia straminea*—Br.), bark of creeper.
Blue Gum (*Eucalyptus globulus*—Lab.), bark of tree.
Stringy-bark (*Eucalyptus obliqua*—L. Her.), bark of tree.
Lepidosperma squamatum—Lab., leaf fibres.
Fibrous Grass (*Stipa semibarbata*—Br.), fibrous stems.

Pithy Substances.

Rush (*Juncus vaginatus*—Br.), pith.

Bark and Timber exported from Tasmania.

The value of Tasmanian Bark and Timber exported during the last five years amounted to £627,361, or an average of about £125,472 per year. This represents nearly $\frac{1}{11}$th of the total exports. By far the greater part was shipped direct to Victoria, although, as regards Bark, the greater portion was destined for European markets. Apart from Wattle Bark, which generally—year 1888 excepted—forms the chief article of value, the following are the principal timbers exported—viz., Blue Gum, Stringy Bark, and Blackwood. The value of exports to various countries is shown, in respect of the year 1889, in the order of their importance; thus :—

Exports to each Country during 1889.

	Bark.		Timber of all kinds.
1. Victoria	£49,158	1. Victoria	£36,187
2. New South Wales	19,787	2. South Australia	16,766
3. New Zealand	15,738	3. New Zealand	5965
4. United Kingdom	1460	4. New South Wales	4243
5. Queensland	1060		
6. South Australia	45	Total	63,161
Total	87,248		

* Mr. Ransome greatly admired the polished examples of the woods in this list, and states that they would be valuable in the English market for cabinet work.

† In addition to their ornamental uses, it is found that for toughness, durability, absence of shrinkage or expansion, the timber of these trees excels all other known timbers for such purposes as boat knees, belaying pins, &c.

The following Tables give further particulars regarding the nature of the Timber exported, and also the proportions for each country :—

BARK and Timber exported from Tasmania during the Five years 1885–1889.

Quantities and Values.

	1885.	1886.	1887.	1888.	1889.
Bark ..... Tons	12,287	12,030	9689	7814	10,575
Value £	83,580	79,606	60,898	61,829	87,248
Timber, Quantities—					
Palings ..... No. thousands	2503	2120	1530	1674	1417
Treenails, Spokes, &c. ..... ditto	333	418	391	267	262
Posts, Rails, &c. ..... ditto	71	49	12	55	37
Piles, Beams, &c. ..... No.	...	75	...	...	(ft)4517
Laths, Shingles... No. thousands	643	589	120	5	190
Sawn and Hewn ..... 1000 feet	7085	6296	7503	15,164	12,231
Logs ..... ditto	...	...	63	250	212
Slabs ..... ditto	...	...	...	...	...
Shaped Pieces ..... No.	9153	8842	3917	11,632	9497
Blackwood, sawn..... 1000 feet	1596	1186	320	1174	1574
Blackwood, log..... ditto	...	...	735	766	1,504,723
Batten ..... ditto	...	...	...	...	...
Value ..... £	45,077	37,353	37,411	71,198	63,161
Total Value, Timber and Bark	128,657	116,959	98,309	133,027	150,409

DIRECTION and Value of Exports of Bark and Timber for Five years 1885–1889.

United Kingdom	Bark, £	9466	9816	3040	90	1460
	Timber, £	30	149	25	8	...
Victoria	Bark, £	33,683	28,758	22,647	26,393	49,158
	Timber, £	20,423	19,812	24,382	50,602	36,187
New South Wales	Bark, £	25,846	23,400	23,921	21,808	19,787
	Timber, £	3127	3095	2988	2198	4243
Queensland	Bark, £	660	1355	963	1006	1060
	Timber, £	94	120	221	585	...
South Australia.....	Bark, £	475	120	70	...	45
	Timber, £	14,269	5389	5837	12,529	16,766
New Zealand	Bark, £	13,450	16,157	10,257	12,532	15,738
	Timber, £	7834	8596	3958	5284	5965
Guam	Bark, £	...	...	...	...	...
	Timber, £	...	292	...	...	...
All Countries	Bark, £	83,580	79,606	60,898	61,829	87,248
	Timber, £	45,077	37,353	37,411	71,198	63,161
	Bark and Timber, £	128,657	116,959	98,309	133,027	150,409

TIMBER TRADE AND INDUSTRIES.

Timber Imports from other Countries.

Notwithstanding our almost infinite local resources, the importation of foreign timber into the Colony is comparatively large. These imports, however, are almost wholly confined to soft woods of the Pine family, and though frequently shipped from Australian ports to this

Colony, they are—with the exception of the New Zealand "Kauri"—mostly derived from Europe and America. The softer woods of these countries are much used in the internal wood-work of houses, and especially for sashes, doors, &c. The larger part of these imports comes from Sweden. Our own native Pines are much superior for beauty and durability; but owing to inaccessibility of the regions in which they grow they cannot be introduced so cheaply into the local markets.

Perhaps, too, the conservative spirit of architects, accustomed to European and American woods, have some influence in repressing the use of local timber where they might be used with the greatest advantage. The following table shows the quantity and value of these imports during the last five years, distinguishing the countries from which the timber was shipped:—

Timber Imported during the last Quinquenniad.

	Quantity in superficial feet.					Value.				
	1885.	**1886.**	**1887.**	**1888.**	**1889.**	**1885.**	**1886.**	**1887.**	**1888.**	**1889.**
	No.	No.	No.	No.	No.	£	£	£	£	£
	Dressed Timber (Tongued and Grooved Boards, &c.)									
United Kingdom	299,500	417,600	352,719	125,890	32,246	3011	2062	3955	1175	202
Victoria	521,300	691,350	410,569	431,507	158,119	5723	3414	5561	5006	1704
New South Wales	9521	364,100	23,375	...	3850	141	1798	229	...	100
Queensland	265,258	...	...	...	...	2037	...	...	...	...
New Zealand	...	...	400	1575	3425	...	...	3	10	40
America	59,021	72,950	54,632	17,050	83,523	453	360	400	180	492
Sweden	...	...	905,422	200	1,228,416	...	...	9215	2	9388
Total (Dressed)	1,145,600	1,546,000	1,747,117	576,222	1,510,579	11,365	7634	19,363	6373	11,926
	Sawn Timber.									
United Kingdom	84,325	324,753	284,415	118,159	115,097	5822	2327	1873	678	720
Victoria	125,900	982,047	807,158	258,450	348,719	6605	3912	5661	2413	3425
New South Wales	4575	187,902	202,384	29,804	472,445	85	1417	1443	317	3082
Queensland	...	...	190,000	...	...	...	...	800	...	...
South Australia	45,925	21,985	75,000	...	...	360	199	350	...	...
New Zealand	727,175	1,273,561	576,350	1,270,047	548,581	9468	7513	3415	5854	2416
America	4850	700,252	33,194	279,950	672,283	19	3345	360	1800	4700
Sweden	16,975	...	1,258,884	1,034,060	1,042,165	1250	...	6900	4181	8002
Germany	...	...	130,800	...	...	...	...	872	...	...
Total (Sawn)	1,008,725	3,440,500	3,558,185	2,990,470	3,199,290	23,609	18,713	21,674	15,243	22,345
Total (Dressed and Sawn)	2,154,325	4,986,500	5,305,302	3,566,692	4,709,869	34,974	26,347	41,037	21,616	34,271

CHAPTER VII.

Fauna, and Animal Products.

FAUNA.

THE indigenous Fauna of the Colony is somewhat similar to that of the Australian mainland.

MAMMALIA.

Of the 46 species of terrestrial Mammals inhabiting the Island, 2 belong to the Monotremata, of which the peculiar animal known as the Duck-bill platypus is the most remarkable. There are 27 representatives of the Marsupialia or pouched animals, 9 of which are peculiar to the Island; the most remarkable of these being the ferocious Tasmanian Devil (*Sarcophilus ursinus*), and the wolf-like Native Tiger, (*Thylacinus cynocephalus*). The Bats have 4 representatives. Of Rodents, or gnawing animals, there are 13 representatives, of which the most conspicuous is the common Water Rat, or Yellow-bellied Musk Rat (*Hydromys chrysogaster*).

The following is a complete List of the terrestrial Mammals so far as known :—

* Those marked with an asterisk are supposed to be peculiar to the Colony.

MONOTREMATA :

Platypus (*Ornithorhynchus anatinus*).
Porcupine (*Echidna setosa**).

CHIROPTERA (BATS)—Family *Vespertilionidæ :*

Long-eared Bat (*Nyctophilus Timoriensis*—Geoff.).
Tasmanian Bat (*Vespertilio Tasmaniensis*).
Small-toothed Bat (*Scotophilus microdon*).

Family *Pteropodidæ :*

Flying Fox† (*Pteropus foliocephalus*).

MARSUPIALIA, OR POUCHED ANIMALS :

Forester Kangaroo (*Macropus major*).
Brush Kangaroo (*Halmaturus Bennettii.*)*
Wallaby (*Halmaturus Billardieri*).*
Jerboa Kangaroo (*Bettongia cuniculus*).
Potoroo (*Potorous murinus*).
Red Kangaroo Rat (*Potorous rufus*).*
Wombat (*Phascolomys wombat*).
The Bandicoot (*Perameles obesula*).
Striped Bandicoot (*Perameles Gunnii*).*
Mice-like Marsupials, having no distinguishing common name { *Antechinus Swainsonii,* A. minima,* A. albipes, A. leucopus,* A. Rolandensis,* A. leucogenys,* A. niger,* A. concinnus,* A. Moorei,* A assimilis.**

†Does not inhabit the mainland of Tasmania. Occurs on Kent's Group, and probably King's Island.

Opossum Mouse (*Dromicia nana*).*
Common Opossum (*Phalangista vulpina*).
Ring-tailed Opossum (*Phalangista Cookii*).
Tiger Cat (*Dasyurus masculatus*).
Native Cat (*Dasyurus viverrinus*).
Native Devil (*Sarcophilus ursinus*).*
Native Tiger or Hyæna (*Thylacinus cynocephalus*).*

DECIDUATA.—*Rodentia:*

Yellow-bellied Musk Rat (*Hydromys chrysogaster*).

True Mice, but having no separate distinguishing common names: *Mus setifer*,* *M. castaneus*,* *M. fuscus*,* *M. leucopus*,* *M. pachyurus*,* *M. Simsoni*,* *M. tetragonurus*,* *M. variabilis*,* *M. velutinus*.*

It will be seen from this List that, with the exception of the small Rodents, there is a general absence among the Mammals of all such forms as are to be met with in ex-Australian regions. The most characteristic forms are the pouched Kangaroos, Devils, Tigers, Bandicoots, &c. The Forester Kangaroo is now fast disappearing. The male attains a length of upwards of five feet from the tip of the nose to the root of the tail. The hind quarters of the Kangaroo and Wallaby are much esteemed as food. The flesh, when cooked, tastes something like venison. The Wombat is also used for food, and, when cooked, the flesh tastes like that of sucking-pig. The rest of the animals are not utilised except for their fur or skins; and of these the following are most valuable—viz., common Black and Grey Opossum (fur); Native Cats, Wallaby, Kangaroo, and Tiger (skins).

The Devil and Tiger are very ferocious, and prey upon the sheep as well as upon the native animals. In mountain regions they are still a source of trouble to sheepowners; but they rarely attack man except when closely pursued.

MARINE MAMMALS.

Besides the terrestrial forms, there are various species of Whales, Seals, and Porpoises in the neighbouring seas. The latter enter the estuaries and rivers during the summer in immense schools. The most important for commercial purposes are the Black and Sperm Whale. In the year 1851-2 the Sperm Whale Fishery formed one of our principal industries, but it has fallen off recently owing partly to the greater scarcity of the animals, but chiefly to the introduction of the cheaper mineral vegetable oils.

BIRDS.

Nearly all families of Birds are well represented, although comparitively few are peculiar to the Colony. Altogether there are about 187 indigenous species, including 11 Hawks and Eagles, 1 Osprey, 3 Owls, 8 Parakeets, 4 Lorikeets, 5 Cuckoos, 2 Kingfishers, 1 Swift, 2 Moreporks (*Caprimulgidæ*), 4 Crows and Magpies, 1 Summer-bird, 1 Shrike-thrush, 5 representatives of the Butcher-bird family (including the mellow-noted Magpie, which is everywhere a general favourite), 3

Fantails, 5 Flame-breasted Robins, including the beautiful little Blue Wren, 3 Thrushes, 8 of the family *Timeliidæ* (embracing the curious little Emu Wren, the Ground Dove, Rush Warbler and Bush Tits), 10 representatives of the Honeyeaters (embracing the prized Wattle Birds and the garrulous Miner), 1 White Eye, 3 Diamond Birds, 2 Migratory Swallows, 1 Wood Swallow, 1 Finch, 1 Pipit, 4 Pigeons (including the 2 Bronze-wings), 4 Quail, 8 species of *Rallidæ* (embracing the Coot, Native Hen, and the Crakes and Rails), 9 species of the Curlew family, including the Australian Snipe, 10 Plovers, 2 Oyster Catchers, 4 Terns, 2 Gulls, 2 Skus, 28 species of the family *Procellaridæ*, which includes the Wandering Albatross, Mutton Bird, Cape Pigeon, Prions and various Petrels, 5 species of the family *Pelecanidæ* (including the large Australian Pelican, the Australian Gannet, and 3 Cormorants, all of which are most destructive to fish), 12 species of *Anatidæ*, embracing that *rara avis* the Black Swan (Cape Barren Goose), Musk and other Ducks, 4 Herons, 1 Bittern, 3 Grebes, and 3 Penguins.

Although the orders *Passeres* and *Grallæ* embrace nearly half of all the known species, they are not so important as the smaller orders *Columbæ*, *Gallinæ*, and *Anseres*, which afford so much amusement to sportsmen, and supply the table with many delicacies. The various species of Pigeon, Quail, Geese, Wild Duck, and Black Swan are very abundant in the Lake districts, and even near the cultivated settlements.

Many of the beautiful breasted sea-birds might furnish valuable skins for commercial purposes, notably the various species of Penguin. The only species at present utilised to any extent for commercial purposes is the Mutton Bird, on the islands of the Furneaux Group. Millions of these Sooty Petrels there make their nests in open burrows on slopes facing the sea. At the proper season (December) the half-castes destroy the young in vast numbers, from which they obtain a valuable anti-friction oil, called Mutton Bird Oil. It is used on the local railways for lubricating the axle boxes of waggons and carriages, machinery, &c. The flesh of the Mutton Bird, which is preserved in large quantities, also forms an important article of food for these islanders. To those who can overcome the rather overpowering odour, the flesh is not disagreeable, and tastes like mutton ; hence the common name.

The sea birds breed during the season in myriads on the islands near the coast, and the fishermen prize the eggs of many of them, which they consume as food. It is stated that the eggs of the Common Gull have a fine sweet flavour, equal to those of the domesticated hen.

The largest birds are the Cape Barren Goose and the Black Swan. The Emu, which existed on the island at the time of the first settlement, is now extinct.

Colonel Legge also contributes the following observations:—" As regards the number of its species, Tasmania campares ill with islands of a warmer climate. If we take her typical land birds, and eliminate the last 8 orders, beginning at the Rails, we have only some 90 or more species; and as regards the water-frequenting birds, though the Waders, *Grallæ*, are fairly represented with 21 species, yet the Petrels vastly predominate over the other orders of these birds, there being no

less than 28 sorts of these oceanic wanderers. In land birds, with which we should be more particularly interested, there are no families of the great *Passerine* order with very many species; that which is best represented being honeyeaters (10 sp.), whose existence here is of course due to our honey-bearing trees. In this family the handsome Spinebill, the Tasmanian Honeyeater, the Miner, and the Wattle Bird are the most noteworthy species. The pigeons and Game Birds are only fairly represented. It is a marked feature of the Australian Avifauna that there are no large representatives of the *Tetraonidæ* (Partridges), the diminutive sub-family of the Quails doing duty for all the rest. The 'Skulker' order comes well to the front in our island, as we have 8 species of Rails, but some of these are very rare. In the next order, of Waders, which are moderately well represented, there are several well-known cosmopolitan migrants, such as the interesting little Turnstone, the Whimbrel, and the Grey Plover (*Squatarolo Helvetica*), which pay us an annual visit, while other members, widely distributed in the old world, such as the Curlew Stint, the Godwit, and the Golden Plover, likewise visit us. It should not be overlooked, also, that the Snipe of Australia, abundant in this Island, is one of the finest species of its numerous family. The list of our sea birds is swelled by the great number of Petrels found round our coasts, the largest of which is the magnificent Albatross, and the smallest the Storm Petrels, called by sailors 'Mother Carey's Chickens.' One of these species, the Yellow-footed Storm Petrel (*Oceanites oceanica*), is the smallest sea bird but one in the world. The Sea Gulls are poorly represented, there being but two species of the true Gull on our coasts. The Terns or Swallows of the Sea are more numerous, these being 4 species, but they are locally distributed, and not numerous, and consequently we are less familiar with them. Among the 'Pouncer' order (*Steganopodes*), we have one troublesome and widely-distributed species, the common Cormorant, which is most destructive to our important fish. The Duck order (*Anseres*) contains several interesting forms, which are distinct Australian types, such as the Cape Barren Goose, the Freckled Duck, the Membranaceous Duck, and the Musk Duck; while our Swan, the only species of its interesting family in Australia, has a world-wide reputation, founded on its remarkable colour. Of the remaining Orders there is not much to be said; those singular birds, the Grebes, well known as furnishing such beautiful trimmings for ladies' attire, are well represented by 3 species; and the Penguins, by the same number."

The following is a brief classified Synopsis under the Orders and Families, as arranged by Col. Legge, *R.A.*, one of our best Ornithologists:—

	Species.		Examples.
Order ACCIPITRES—			
Family *Falconidæ*	11		Swamp Hawk, Wedge-tailed Eagle
„ *Pandionidæ*	1		Osprey
„ *Bubonidæ*	2		Hawk-owl
„ *Strigidæ*.....	1		Barn-owl
	—	15	
Order PSITTACI—			
Family *Psittacidæ*	8		Black Cockatoo, Parakeet
„ *Trichoglossidæ*.	4		Swift Lorikeet
	—	12	

	Species.		Examples.
Order PICARIÆ—			
Family *Cuculidæ*	5		Bronze Cuckoo
,, *Alcedinidæ*.....	2		Tasmanian Kingfisher
,, *Cypselidæ*	1		Spine-tailed Swift
,, *Caprimulgidæ*..	2		Morepork
	—	10	
Order PASSERES—			
Family *Corvidæ*	4		Black Magpie, Crow
,, *Campophagidæ*	1		Summer Bird
,, *Prionopidæ*	1		Whistling Shrike-Thrush
,, *Laniidæ*	5		Magpie, Jackass
,, *Muscicapidæ*...	8		Flame-breasted Robin, Wren
,, *Turdidæ*	3		Ground Thrush, Red Warbler
,, *Timeliidæ*.....	8		Ground Dove, Emu Wren
,, *Melyphagidæ*...	10		Wattle Bird
,, *Zosteropidæ*.....	1		White Eye
,, *Dicæidæ*	3		Diamond Bird
,, *Hirundinidæ* ...	2		Tree Swallow
,, *Fringillidæ*	1		Fire-tailed Finch
,, *Motacillidæ*	1		Australian Pipit
,, *Artamidæ*	1		Wood Swallow
	—	49	
Order COLUMBÆ—			
Family *Gouridæ*	2		Bronze Wing Pigeon
,, *Treronidæ*	2		Topknot Pigeon
	—	4	
Order GALLINÆ—			
Family *Tetraonidæ*	3		Stubble Quail, Brown Quail
,, *Turnicidæ*.....	1		Painted Quail
	—	4	
Order FULICARIÆ—			
Family *Rallidæ*.....		8	Coot, Native Hen
Order GRALLÆ—			
Family *Scolopacidæ*.....	9		Snipe, Curlew
,, *Charadriidæ*.....	10		Golden Plover, Grey Plover
,, *Hæmatopodidæ*..	2		White-breasted Oyster Catcher
	—	21	
Order GAVIÆ—			
Family *Laridæ*	8		Little Gull, Caspian Tern
,, *Procellariidæ*....	28		Albatross, Mutton Bird, Petrel
	—	36	
Order STEGANOPODES—			
Family *Pelecanidæ*		5	Pelican, Gannet, Cormorant
Order ANSERES—			
Family *Anatidæ*		12	Black Swan, Cape Barren Goose Wild Duck
Order HERODIONES—			
Family *Ardeidæ*.....		5	Bittern, Heron
Order PYGOPODES—			
Family *Podicipidæ*		3	Little Grebe
Order IMPENNES—			
Family *Spheniscidæ*.....		3	Fairy Penguin
Total		187	

Reptiles.

Reptiles are very poorly represented in the Island. There are no Tortoises anywhere in our rivers; and the Turtles have only one solitary representative in our seas, and of its existence we have only recently become aware by the capture of one solitary example (the Luth or Leathery Turtle—*Sphargis coriacea*) at Southport. Crocodiles of any kind are entirely absent. Of Snakes there are only three species; viz.—

Tiger Snake or Banded Snake (*Hoplocephalus curtus*).
Copper-head Snake (*Hoplocephalus superbus*).
Whip Snake (*Hoplocephalus coronoides*).

In the summer these snakes are not uncommon in open sandy bush tracts and on the margins of swamps. The two first attain a length of nearly six feet, but no specimen has been recorded over that length. The Whip Snake is very small; it is seldom found over 12 to 18 inches long. All of our snakes are venomous, and sometimes cause the death of animals. Human beings are occasionally bitten, but death from snake-bite is seldom recorded; no death from this cause has occurred for many years past. It has been shown, however, that dogs bitten by captive Tiger Snakes seldom survive; most of them died within two hours. Snake antidotes of various kinds have been prepared by one or two persons; and it is noteworthy that Tiger Snakes experimented upon by an old man named "Charlie" from Green Ponds, about three years ago, were on several occasions allowed to inflict bites upon his hands. On such occasions he immediately rubbed the part with the antidote, and seemed to suffer no serious injury from the bites thus inflicted. Dogs bitten by the same snakes died quickly, with severe convulsions and vomiting. It is possible that certain persons are so constituted that snake-bite may be comparatively innocuous. "Charlie" is stated to have been a hard drinker, and as the application of strong spirits is often efficacious in case of snake-bite, it is possible that his preservation from the effects of snake-bite was due more to this influence than to the supposed antidote.

The natives were in the habit of roasting and devouring the larger snakes. The flesh roasted is very good, resembling the cooked flesh of a young chicken.

Representatives of the Lizard family are exceedingly abundant in stony places. Some of them are very beautifully marked with colours and scutes. All are small and harmless. The largest of the 17 species known attains a length of from 12 to 15 inches. It is called, locally, the Iguana or Sleeping Lizard (*Cyclodus ingrolutens*), and it is stated that it attacks the snakes and destroys them.

Fishes.

The known sea and inland fishes of Tasmania, including the seven species of European fresh-water fishes successfully acclimatised, number 213 species. These are generally grouped by naturalists under 4 sub-classes, 65 families, and 145 genera. About one-third of the number stated may be considered good edible fish, although only about 21 species are caught in sufficient number to form a market supply. The following are the local names of those found in greatest abundance, the

first six alone forming articles of export* :—The Hobart Trumpeter, Perch *(Chilodactylus)*, Snotgall Trevally, Barracouta, Kingfish, Conger Eel, Native Salmon, Bastard Trumpeter, Red Perch, Rock Gurnet, Flathead, Horse Mackerel, Sea Mullet, Rock Cod, Ling, Flounder, Sole, Garfish, Common Eel.

The first of these, the Hobart Trumpeter, is undoubtedly the king of Tasmanian Fishes, and is generally esteemed as the finest of the Australian edible fishes. It commands a high price and ready sale in the local market as well as in the neighbouring colonies; but, unfortunately, although captured in considerable numbers all the year round, it is very limited in its distribution, being confined to certain coral reefs or banks 10 to 70 fathoms deep fringing the southern coasts of Tasmania between Granville Harbour in the west and Seymour in the east.

The Barracouta, Kingfish, and Rock Cod appear periodically in such vast numbers that frequently the supply is greatly in excess of local demand. Owing to the absence of proper fish-curing establishments, large quantities have, at times, been known to be wasted or merely utilised as manure.

It is known also that large schools of Sand-smelts, Sprats, and Anchovies appear upon our coasts at regular seasons, but, for the reasons already mentioned, and because the fishermen lack the proper appliances in the shape of *Pilchard Seine* nets, no attempt hitherto has been made to open up an industry in this particular direction.

Trawl-nets have been tried on the coast, but without good result. Either the class of bottom fish is absent in our waters, or the proper grounds have yet to be discovered suited for this mode of capture.

Besides the fishes proper, the fishing industry is largely dependent upon the capture of a fine species of Crayfish *(Palinurus Edwardsii)*, which often weighs, when mature, from 6 to 7 lbs. It is estimated that there are over 280 tons of this highly prized Crustacean brought to market yearly, including those exported to Victoria and New South Wales, but excluding those used for baiting purposes and those captured by Victorian boats. There is also a small Prawn taken in considerable quantities during the season in the River Tamar. They abound all round our coasts, but little attention has been devoted to them anywhere on the coast beyond the River Tamar.

Of Molluscs there is only one of any importance,—viz., the Common Mud Oyster. Although not now abundant—the beds now worked only yielding about 100,000 oysters per year—it is estimated by competent authorities that, about 20 years ago, the various beds now unprofitable yielded about 44,000 bags, or 22,000,000 oysters per year.

The destruction of these once prolific Oyster beds have engaged much attention. Although attributed generally to reckless unrestricted dredging continued until the greater number of the beds were wholly destroyed, it is believed by some that natural causes were operating concurrently with the causes alleged. Attempts have recently been made to extend the cultivation of the Oyster in the old habitats with

* For further particulars regarding Natural History and Classification, see Report of the Tasmanian Fisheries Commission, 152 pp., 1882; and General and Critical Observations on the Fishes of Tasmania, with a Classified Catalogue of all the Known Species, by R. M. Johnston, F.L.S., &c. (Proc. Roy. Soc. of Tasmania, 1882).

great promise of success. Natural conditions again seem to be working round in favour of the development of the Oyster. The prolific fall of Spat during the last two or three years in the natural beds at Cole's Bay and Little Swanport, and their rapid growth there, promises well for the future of the new centres where artificial beds are laid down.

The following is a more extended List of the Edible Fishes brought to market in more or less abundance, according to the kind and season :—

LIST of the Principal Edible Fishes in Tasmanian Waters.

[a] Abundant all the year round. [b] Abundant during the season only.
[c] Common all the year round. [d] Common during the season only.
[e] Not uncommon ditto. [f] Not uncommon ditto.

PERCIDÆ (Perch Family).

Anthias rasor	*Red Perch* [d]	Season, winter.
Lates colonorum	*Brackish Water Perch* [a]	Confined to Anson's River.
Arripis truttaceus	*Native Salmon* [a]	Periodically enter estuaries in schools.

SPARIDÆ (Bream Family).

Girella tricuspidata	*Black Bream* [d]	Season, October to March. C. Australis enters brackish water lagoons and mouths of rivers for spawning purposes.
„ simplex	*The Sweep* [d]	
Chrysophrys Australis	*Silver Bream* [d]	

CIRRITIDÆ (Trumpeter Family).

Chilodactylus Allporti	*Carp* [d]	Season, January to March.
„ macropterus	*Perch* [a]	Height of season (mature), April to August.
„ vizonarius	*Magpie Perch* [f]	
Latris hecateia	*Trumpeter* [a]	The most excellent of all Tasmanian fish. Sometimes reaches a weight of 60 lbs.
„ Forsteri	Silver Bastard [b]	Abundant during season, January to March. Rivals the Real Trumpeter at this stage.
	Red Bastard [a]	Immature form; good, but not equal to mature form.
Mendosoma Allporti	*Real Bastard* [c]	

SCORPÆNIDÆ (Gurnet Family.)

Sebastes percoides	*Rock Gurnet* [c]	Found on the outer reefs.

TRICHEURIDÆ (Barracouta Family).

Lepidopus caudatus	*Frost Fish* [f]	Caught at odd times—winter.
Thyrsites atun	*Barracouta* [b]	Important food fish. Caught in vast numbers, November to August.
„ Solandri	*King Fish* [b]	Season, December to June. Come and go in vast numbers, but disappear in some years altogether.

CARANGIDÆ (Horse Mackerel Family).

Trachurus trachurus	*Horse Mackerel* [b]	Season, January to April.
Caranx Georgianus	*Silver Trevally* [b]	Enter Tamar and other rivers, midwinter.
Seriola grandis	*Tasmanian Yellow-tail* [b]	Abundant Northern Coast, March to April.

Neptonemus brama	*Snotgall* [b]	Season, March to April.
„ dobula	*Mackerel Trevally* [b]	ditto, entering estuaries in large schools.

CYTTIDÆ (Dory Family).

Cyttus Australis	*Bastard Dory* [d]	Enter estuaries in schools, but seldom captured.

TRACHINIDÆ (Whiting Family).

Uphritis Urvillii	*Sandy* [a]	Abundant in the River Jordan and East Coast rivers.
Sillago ciliata	*Whiting* [d]	One of the most delicious fishes in our estuaries.

COTTIDÆ (Flathead Family).

Platycephalus Bassensis	*Common Flathead* [a]	A very fine fish, though repulsive looking. Abundant on sandy bottoms.

ATHERINIDÆ (Silver Belly Family).

Atherina presbyteroides „ hepsetoides „ hepsetus „ microstoma „ Tamarensis	*Silver Bellies*	These little fishes are found everywhere in vast shoals. Although seldom exceeding 5 inches long, they form a delicious article of food. No trouble is taken to capture them for market.

MUGILIDÆ (Mullet Family).

Mugil cephalotus	*Sand Mullet* [d]	Excellent fish. Found on the northern and eastern coasts.
Agonostoma Forsteri	*Estuary Mullet* [a]	Caught chiefly by hand-rod, in large numbers.

LABRIDÆ (Parrot Fish Family).

Cossyphus cerulæus	*Blue Head* [a]	Abundant, and although good food, it is not brought to market.

GADOPSIDÆ (Blackfish Family).

Gadopsis marmoratus	*Freshwater Blackfish* [a]	An excellent fish, peculiar to our northern rivers.

GADIDÆ (Cod Family).

Pseudophycis barbatus	*Rock Cod* [a]	Excellent fish, well suited for smoking. Very numerous during winter.

OPHIIDÆ (Ling Family).

Genypterus blacodes	*The Ling* [c]	Very fine fish.

PLEURONECTIDÆ (Flounder Family).

Rhombsolea manopus	*Flounder* [a]	Excellent table fish.
Amnotretis rostratus	*Sole* [c]	Abundant in some estuaries.

SALMONIDÆ (Salmon Family).

Retropinna Richardsoni	*Whitebait or Smelt*	Enters estuaries in large shoals. Though only 3 to 4 inches long, they are very delicious.

Salmo salar	The Salmon	These valuable fishes have all been successfully introduced from the United Kingdom. The three last species are very abundant now in our rivers and seas. The Brown Trout sometimes reaches a weight of 32lbs.
„ trutta	Sea Trout[b]	
„ fario, *v.* Ansonii	Brown Trout[b]	
„ fontinalis	American Trout[b]	

HAPLOCHITONIDÆ (Grayling Family).

Prototroctes maræna	*Cucumber Mullet*[b] *or Grayling*	This fine little fish is the most delicious of our freshwater fish. It is found abundantly in the Mersey and northern and western rivers. Affords excellent sport to anglers.

GALAXIDÆ (Jolly-tail Family).

Galaxias truttaceus	*Spotted Trout*[a]	Small fish, very abundant in all our streams. Excellent for the table, and caught readily by rod and line.
„ attenuatus	*Jolly Tail*[a]	
„ auratus	*Golden Trout*[c]	Largest form, Lake Sorell.

SCOMBRESOCIDÆ (Gar Fish Family).

Hemirhamphus intermedius	*Gar Fish*[b]	Excellent fish for the breakfast table. Season, April–October.

CLUPEIDÆ (Herring Family).

Engraulis encrasicholus	*Anchovy*[b]	Enters estuaries in large numbers during summer.
Clupea sprattus	*Sprat*[b]	Great shoals, Aug-Nov.

No attempt has yet been made to utilise these valuable fishes, owing to the absence of appliances and to the lack of enterprise in the shape of fish-curing establishments.

MURÆNIDÆ (Eel Family).

Anguilla Australis	*Common Eel*[a]	No proper appliances exist for the capture of these valuable fish.
Conger vulgaris	*Conger*[a]	Valuable market fish, sometimes attains a weight of 40 lbs.

Sharks of various kinds are abundant, and although the smaller forms, such as Mustilus, are edible, they are not utilsed as food.

Galeus canis (Dog Fish) is captured largely in certain localites, and the liver is boiled down for oil. The fishermen also largely use the flesh of "Gummies" and "Dog Fish" as bait for the deep-sea Trumpeter fishing.

The following is a classified synopsis of all the known Fishes of Tasmania, embracing 65 families, 145 genera, and 213 species:—

SYNOPSIS of Tasmanian Fishes of kinds.

Family.	Genera.	Species.	Examples.
	Sub-class TELEOSTEI.		
Percidæ	12	13	Red Perch, Native Salmon
Squamipinnes	1	1	Scorpis
Mullidæ	1	1	Red Mullet
Sparidæ	4	5	Bream, Schnapper
Hoplognathidæ	1	1	Hoplognathus
Cirrhitidæ	5	14	Carp, Perch, Trumpeter
Scorpænidæ	5	7	Gurnet, Soldier

Family.	Genera.	Species.	Examples.
Berycidæ	2	2	Nannegai
Kurtidæ	1	1	Pempheris
Sciænidæ	1	2	Maigre
Xiphiidæ	1	1	Swordfish
Trichiuridæ	2	4	Barracouta, King-fish
Carangidæ	5	8	Horse Mackerel, Snotgall
Cyttidæ	2	2	Bastard Dorey
Scombridæ	5	5	Mackerel, Pilot-fish
Trachinidæ	5	6	Cat-fish, Whiting
Pediculati	1	2	Hand-fish
Cottidæ	3	5	Flathead, Flying Gurnard
Gobiidæ	2	2	Goby
Gobiesocidæ	2	2	Gobiesox
Blenniidæ	6	8	Blenny, Bully
Sphyrænidæ	2	2	Jack, Pike
Atherinidæ	2	6	Sand-smelt, Silver Belly
Mugilidæ	2	2	Mullet, Sand Mullet
Centriscidæ	1	1	Snipe, or Trumpet-fish
Lophotidæ	1	1	Lophotes
Trachypteridæ	2	2	Ribbon Fish
Pomacentridæ	1	1	Rock Perch
Labridæ	4	13	Blue Head, Stranger, Parrot-fish
Gadopsidæ	1	1	Black Fish
Gadidæ	2	2	Rock Cod
Ophidiidæ	2	2	Ling
Macruridæ	2	2	Coryphæna
Pleuronectidæ	3	4	Sole, Flounder
Haplochitonidæ	2	2	Derwent Smelt, Freshwater Herring
Scopelidæ	1	1	Alepidosaurus
Salmonidæ	2	5	Salmon, Whitebait
Galaxidæ	1	5	Spotted Trout, Jolly-tail
Scombresocidæ	1	1	Gar Fish
Cyprinidæ	2	3	Carp, Tench
Gonorhynchidæ	1	1	Sand Eel
Clupeidæ	2	3	Anchovy, Sprat
Synbranchidæ	1	2	Chilobranchus
Muræindæ	4	5	Common Eel, Conger
Pegasidæ	1	1	Sea-dragon
Syngnathidæ	5	9	Pipe-fish, Sea-horse
Sclerodermi	2	12	Leather Jacket, Trunk-fish
Gymnodontes	4	5	
Total Teleostei (49)	121	186	

Sub-class CHRONDROPTERYGII (Sharks and Rays).

SHARKS.

Chimæridæ	1	1	Elephant Fish
Carcharidæ	4	4	Blue Shark, Tope, Gummy
Lamnidæ	3	3	Porbeagle, Nurse, Thrasher
Notidanidæ	1	1	Tasmanian Blue Shark
Scyllidæ	3	4	Wobbigong
Cestracionidæ	1	1	Port Jackson Shark
Spinacidæ	1	2	Spiny Dog
Rhinidæ	1	1	Angel Shark
Pristiophoridæ	1	2	Saw-fish

Rays.

Rhinobatidæ	1	1	The Fiddler
Torpedinidæ	1	1	Electric Torpedo
Rajidæ	1	1	Thorn-back Skate
Trygonidæ	1	1	Stingaree
Myliobatidæ	1	1	Whip-tail Ray
Total Sharks & Rays	(14) 21	24	

Sub-class Cyclostomata.

Petromyzontidæ	2	2	Lamprey, Pouched Lamprey

Sub-class Leptocardii.

Cirrostomi	1	1	Lancelet

Summary.

Sub-class.	Families.	Genera.	Species.
Teleostei	49	121	186
Chrondropterygii	14	21	24
Cyclostomata	1	2	2
Leptocardii	1	1	1
Grand Total	65	145	213

Fishing Industry.

With a scattered and insulated population of about 151,000 inhabitants, it cannot be expected that the fishing industry of Tasmania can be extensive. Nevertheless it is estimated that there are about 86 boats and 175 men engaged therein. The individuals employed hawking the fish within the two chief towns may be estimated at about 80 in number. Altogether it is estimated that, exclusive of the whaling trade, there are 10,507 persons directly depending upon the local fisheries. Hobart, the capital city, is the chief centre of the industry, its position being favourable in this respect from its proximity to the principal fishing-grounds, and its splendid harbour being accessible in all kinds of weather.

Fully 63 per cent. of the men and boats belong to Hobart, and the men carry on their vocation either in the numerous sheltered indentations or bays in the upper or lower waters of the estuary of the Derwent, or in the exposed open sea between Seymour on the north-east and Port Davey on the south-west. The fishing carried on elsewhere, with the exception of the purely river fishing of the Tamar, is very limited, generally engaged in at odd times by persons who do not devote themselves exclusively to the fishing industry. The Tamar boats are not suited for fishing in the open sea of Bass Straits.

With the exception of three or four decked smacks, the most of the boats employed in the waters of the Derwent, or in the open sea Trumpeter and Barracouta fishing-grounds, are mere open centre-board whaleboats, fitted with fish-wells perforated in direct communica-

tion with the sea, and designed to keep the fish alive until sold in the open market in the Fishermen's Dock, Hobart.* The Trumpeter and other fish will feed in such confinement, and the former has been known to live healthily in this way for a period of three months.

The average value of one of these excellent sea-boats† is about £100, and the equipment, in the shape of nets and deep-sea lines, say £20; in all, say £120 for each boat. There are usually three men to each boat. Even with a small crew of this kind, as many as 40 dozen Kingfish, weighing 12 to 14 lbs. each, have been caught in a single night when the fish have been plentiful. Barracouta can be captured in large quantities during the season—January to June. About 24 dozen Barracouta weigh a ton The fishermen state that, could they be assured of a market, 3*s.* a dozen for Barracouta or Kingfish would amply repay them,—*i.e.*, about ¼*d.* a pound.

It is very difficult to estimate the value of fish sales, as no systematic register for the whole Colony has been kept hitherto. It is probable, since the decline of the Oyster fishery, that the yearly sales do not exceed £10,000 per annum.

The value of boats and equipment at present engaged in the fishing industry of Tasmania may be roughly estimated at about £7700. This does not embrace the ships employed in the Whale fisheries. The latter industry has declined considerably during the last decade, as shown by the following summary:—

	Average per year, First Quinquennium.	Average per year, Second Quinquennium.
Ships	8	4
Tonnage	2335	1194
Men	221	101
Value of Oil	£15,932	£7925

The reason of this falling off is stated to be chiefly owing to the decline in price arising from the introduction of mineral oils. Excessive fishing and consequent scarcity of oil is also referred to as a cause of decline.

Fishing Grounds.

Generally, the Fishing Grounds may be divided into three classes:—1. The Home Grounds. 2. The Middle Grounds. 3. The Outer, or Open-sea Grounds.

1. *The Home Grounds*, near shore, or in the upper shallows of the estuaries of the Derwent and Tamar.—The fishing grounds at Port Sorell, Bridport, and George's Bay may be included within this division. The fish captured in these situations consist chiefly of Flounders, Mullet, Garfish, Flathead. Crayfish, Prawns, and Oysters are also taken in the Home Grounds.

* Salt water.

† Generally about 37 feet 6 inches long; beam, 7 feet 8 inches; depth, about 3 feet.

2. *The Middle Grounds.*—Within this division may be included those fishing reefs and banks lying in the more exposed situations of estuaries—such as Wedge Bay and Adventure Bay, in the Derwent—in depth of water from five to six fathoms. In such localities the grab-all net and ordinary hand-lines are used in the capture of Native Salmon, Silver Bastard, Black and Silver Perch, Carp, Rock Cod, Ling, Conger Eel, &c. The indentations around the Eastern and Western Coasts afford ample scope for following out the industry within the limits of this division, especially so in the many sheltered bays in the neighbourhood of Port Davey and Macquarie Harbour.

3. *The Outer, or Open-sea Grounds.*—These principally are situate in the southern and eastern waters of Tasmania, and generally from 1 to 16 miles off the coast, upon coral banks or reefs 10 to 80 fathoms deep. The latter depth is the limit at which Tasmanian fishermen have been successful with deep sea-lines on the Trumpeter banks. Towards the surface of these open waters the Maori jig is principally used in the capture of the Barracouta, and in the season the line, armed with swivelled chain and stout barbless hook, is employed in the capture of the rapacious but valuable Kingfish.

The fishermen, as a class, are as a rule steady and industrious, and although they do not seem to have any special provision in the shape of Friendly Societies or other providential aids, distress is rare and poverty unheard of. Beyond the provisions for acclimatisation and protection of the European Salmonidæ, and the establishment of Oyster beds for breeding purposes, and certain reserves for the protection of natural beds, Government hitherto have only found it necessary to provide measures for the limitation of the sale of unwholesome or under-sized fish.

In the case of the introduced Salmonoids, and as regards the Oyster and Flounder, special provisions have been made for their preservation and development in respect of close seasons, modes of capture, and the absolute or partial closing of particular areas as nursery grounds as a means of protection. This was absolutely necessary to ensure the successful acclimatisation of the Salmonidæ first introduced from Europe in the year 1864.

The fishes successfully introduced are *Salmo salar*, *Salmo trutta*, *Salmo fario* var. *Ausonii*, *Salmo fontinalis*, *Tinca vulgaris*, *Cyprinus auratus*, *Cyprinus carassius*, *Perca fluviatilis*.

Statistics relating to Animal Products.

Fur Trade.

Ruling prices at the date of the following :—

		Undressed.	Dressed.
Wallaby Skins	per doz.	3*s.* to 6*s.*	9*s.* to 12*s.*
Kangaroo Skins	per doz.	12*s.* to 24*s.*	20*s.* to 32*s.*
Opossum (Black)	per doz.	18*s.* to 60*s.*	24*s.* to 66*s.*
Ditto (Grey)	per doz.	4*s.* to 12*s.*	10*s.* to 18*s.*
Tiger Cat Skins	per doz.	6*s.* to 24*s.*	12*s.* to 36*s.*
Native Cat Skins (Black)	per doz.	3*s.* to 9*s.*	7*s.* to 14*s.*
Ditto (Grey)	per doz.	1*s.* to 4*s.*	5*s.* to 10*s.*
Native Tiger Skins (scarce)	per doz.	36*s.* to 72*s.*	48*s.* to 84*s.*
*Rabbit Skins	per 1000	20*s.* to 27*s.* 6*d.*	
†Opossum Rugs, unfinished (Black)		£6 to £12 each	
Ditto (Grey)		£3 to £5 each	
Ditto, finished (Black)		£9 to £30 each	
Ditto (Grey)		£4 10*s.* to £12 each	

* Rabbit Skins range from Kittens, valued at about ¼*d.* each, to first-class heavy winter skins, worth 2½*d.* each.

† Black Opossum Rugs are very rarely made from skins in the green state. The prices quoted are for tanned skins in all cases for rugs.

Fish sold in Hobart Fish Market during the year 1889.

		Quantity.	Price.			Value.		
Fish.			Max.	Min.	Average.	£	*s.*	*d.*
Barracouta	doz.	2227	12*s.*	3*s.*	5*s.* 6*d.*	615	11	0
Bream	„	1	18*s.*	18*s.*	18*s.*	0	18	0
Carp	„	103	4*s.* 6*d.*	3*s.*	3*s.* 6*d.*	18	9	0
Eels (Conger)	„	79	15*s.*	10*s.*	11*s.*	43	13	0
Ditto (Freshwater)	„	100	2*s.*	2*s.*	2*s.*	10	0	0
Flathead	„	2871	1*s.* 3*d.*	1*s.*	1*s.*	146	3	6
Flounders	„	1609	6*s.* 6*d.*	5*s.*	5*s.* 3*d.*	426	17	6
Garfish	„	8165	9*d.*	4*d.*	4*d.*	140	13	6
Gurnet (Rock)	„	88	3*s.* 9*d.*	3*s.*	3*s.* 4*d.*	14	13	4
Kingfish	„	—	—	—	—	—		
Ling	„	19	18*s.*	14*s.*	10*s.* 3*d.*	9	16	0
Mullet	„	2971	2*s.*	10*d.*	1*s.*	150	5	0
Mackerel (Horse)	„	193	1*s.* 6*d.*	1*s.*	1*s.*	10	8	3
Perch	„	4047	5*s.*	3*s.* 6*d.*	4*s.* 5*d.*	894	1	4
Ditto (Red)	„	—	—	—	—	—		
Rock Cod	„	3550	2*s.*	1*s.* 6*d.*	1*s.* 11*d.*	350	9	0
Salmon (Native)	„	2764	1*s.* 6*d.*	8*d.*	9*d.*	110	12	7
Trumpeter (Real)	„	665	25*s.*	20*s.*	21*s.* 10*d.*	728	9	0
Ditto (Bastard)	„	4033	6*s.*	4*s.*	5*s.*	1018	11	6
Trevally	„	55	3*s.* 6*d.*	2*s.*	2*s.* 6*d.*	6	19	0
Whiting		7	1*s.* 6*d.*	1*s.* 6*d.*	1*s.* 6*d.*	0	10	6
		33,547				4697	1	0
Crustaceans.								
Crayfish	score	2778	5*s.*	4*s.*	4*s.* 10¾*d.*	681	10	0
						£5378	11	0

Salmon and Trout Breeding Establishment.

	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Ova introduced from Europe...	...	...	80,000*	160,000*	...	...	400,000*	...
Ova exported to other Colonies..	24,000	17,000	2000	7500	13,000	12,000	6000	...
Salmon Fry liberated in various Rivers, &c.....	3950	6600	8650	31,229[d]	116,200	33,880	9000	7850
Licences (season) issued.....	353	362	411	431	396	417	420†	...
Receipts from Sales of Ova and Licences...	297	266	216	253	263	269	258	246
Working Expenses	277[a]	319	355[b]	465[c]	341	296	437	388

* *Salmo salar.* † In addition there were several weekly licences issued.

[a] Exclusive of £100 for importation of ova.

[b] Exclusive of £460 for importation of ova from England.

[c] Includes £170, special repairs to troughing.

[d] Includes 28,129 fry of *S. salar, ex* ova per *Yeoman,* from Ireland, hatched at the Plenty.

General Fisheries Department.

	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.[e]
Receipts	...	...	...	...	...	...	...	246
Working Expenses	...	...	...	935	...	1369	677	388

[e] Also includes Salmon and Trout Breeding Establishment.

Whale Fisheries.

Year.	Vessels employed.		Tonnage.	Value of Fisheries.	Remarks.
	Ships.	Boats.		£	
1828.....	3	23	...	11,268	In 1822, 724 tuns oil and 3 tons whale fins were exported. In 1823, 226 casks of oil and 52 pkgs. whalebone were exported.
1829.....	7	26	...	12,313	
1830.....	10	42	...	22,065	
1831.....	9	55	...	33,549	
1832.....	12	75	...	37,176	
1833	15	105	...	30,620	
1834.....	23	84	...	56,450	
1835.....	35	155	...	64,858	
1836.....	14	48	1187	57,660	
1837.....	18	75	2739	135,210	
1838	19	79	1999	98,660	
1839.....	26	...	3146	65,600	
1840.....	27	...	3224	66,850	
1841.....	22	...	3170	71,600	
1842.....	18	...	2842	87,400	
1843.....	21	...	3307	74,100	
1844.....	24	...	4264	49,840	
1845	28	...	4460	73,300	
1846.....	28	...	4057	65,150	

Foreign.

Ships.	Tonnage.
12	3838
16	5518
13	4825

WHALE Fisheries—*continued.*

Year.	Vessels employed.		Tonnage.	Value of Fisheries.	FOREIGN.	
	Ships.	Boats.			Ships.	Tonnage.
				£		
1847	27	...	4729	70,000	21	6890
1848	29	...	6081	104,000	26	8497
1849	34	...	7791	46,117	11	3803
				Oil exported.		
1850	40	...	9724	49,547	9	2779
1851	26	...	6538	49,022	14	4687
1852	18	...	3999	36,776	18	6300
1853	7	...	1903	30,106	2	704
1854	6	...	1622	27,863	2	737
1855	17	...	3566	44,110		
1856	33	...	6975	53,670		
1857	...	...	...	46,211		
1858	...	...	...	49,878		

Year.	Vessels.	Tonnage.	Value of Oil Exported.	No. of Men.
			£	
1859	...	...	63,500	...
1860	...	...	57,350	...
1861	...	...	60,230	...
1862	...	...	60,730	...
1863	...	...	30,175	...
1864	...	...	19,925	...
			Produce brought into Port	
1866	9	2257	38,000	229
1867	10	2428	22,800	245
1868	16	3996	52,546	395
1869	17	4364	48,910	415
1870	15	3446	35,880	376
1871	19	4917	46,350	470
1872	19	4917	27,420	488
1873	18	4765	44,000	444
1874	16	4088	30,780	389
1875	13	3525	12,465	315
1876	13	3525	41,740	315
1877	12	3295	31,605	324
1878	11	3156	16,920	321
1879	11	3156	13,425	326
1880	10	2780	12,045	296
1881	10	2780	22,120	296
1882	8	2357	19,096	196
1883	7	2014	14,685	168
1884	6	1745	11,715	151
1885	7	2014	12,600	167
1886	5	1480	6150	124
1887	4	1151	10,450	99
1888	3	783	6165	70
1889	2	546	4260	46

CLASSIFICATION OF ANIMALS AND PLANTS.

TABULAR List of the Principal Divisions of Animals and Plants.

Animals.

Sub-Kingdom.	Class.	Order or Sub-Class.	
A.			PROTOZOA—Animalcules.
	I.		RHIZOPODA.
		1	*Foraminifera*—Foraminifers.
		2	*Radiolaria*—Radiolarians.
		3	*Heliozoa*—Sun-Animalcules.
	II.		INFUSORIA.
		1	*Flagellata.*
		2	*Ciliata.*
	III.		GREGARINIDA.
B.			PORIFERA—Sponges.
	I.		*Myxospongia*—Gelatinous Sponges.
	II.		*Cerasapongia*—Horny Sponges.
	III.		*Halicliondriæ*—Fibro-siliceous Sponges.
	IV.		*Hyalospongia*—Glassy Sponges.
	V.		*Calcispongia*—Calcareous Sponges.
C.			CŒLENTERATA—Zoophytes.
	I.		HYDROZOA—Jelly-fishes and Polypes.
		1	*Hydromedusæ*—Hydra.
		2	*Scyphomedusæ.*
		3	*Siphonophora*—Portuguese Man-of-war.
		4	*Hydrocorallinæ*—Millepora.
		5	*Graptolitidæ*—Graptolites.
	II.		ACTINOZOA—Corals and Sea-Anemones.
		1	*Alcyonaria*—Sea-Pens, Red Corals, Soft Corals.
		2	*Zoantharia*—Sea-Anemones, Madrepores.
		3	*Rugosa*—Palæozoic Corals.
	III.		CTENOPHORA—Venus's Girdle.
D.			ECHINODERMATA—Star-fishes, Sea-Urchins, &c.
		1	*Blastoidea*—Pentremites.
		2	*Cystoidea*—Cystideans.
		3	*Crinoidea*—Feather-stars, Crinoids, and Stone-lilies.
		4	*Asteroidea*—Star-fishes.
		5	*Echinoidea*—Sea-urchins.
		6	*Holothuroidea*—Sea-slugs.
		7	*Ophiuroidea*—Brittle-stars.
E.			VERMES—Worms.
		1	*Enteropneusta*—Balanoglossus.
		2	*Turbellaria*—Ribbon-worms, Turbellarians.
		3	*Nemertea*—Nemerteans.
		4	*Trematoda*—Flukes.
		5	*Cestoidea*—Tape-worms.
		6	*Nematoidea*—Round-worms and Thread-worms.
		7	*Acanthocephala*—Echinorhynchus.
		8	*Chætognatha*—Sagitta.
		9	*Chætopoda*—Earth-worms and Marine Annelids.
		10	*Hirudinea*—Leeches.

Sub-Kingdom.	Class.	Order or Sub-Class.	
			VERMES—*continued.*
		11	*Gephyria* Spoon-worms.
		12	*Rotifera*—Wheel-animalcules.
F.			ARTHROPODA.
	I.		CRUSTACEA.
		1	*Entomostraca*—Water-fleas.
		2	*Malacostraca*—Crabs, Lobsters, and Shrimps.
		3	*Gigantostraca*—King-crabs, Trilobites, &c.
	II.		ARACHNIDA—Spiders, Scorpions, and Mites.
		1	*Linguatulida.*
		2	*Acarina*—Mites and Ticks.
		3	*Pycnogonida*—Sea-spiders.
		4	*Tardigrada*—Bear-animalcules.
		5	*Araneida*—Spiders.
		6	*Phalangidæ*—Harvest-men.
		7	*Pedipalpi*—Tarantulas.
		8	*Scorpionidea*—Scorpions.
		9	*Pseudoscorpionidea*—Book-scorpions.
		10	*Solifugæ.*
	III.		PROTOTRACHEATA—Peripati.
	IV.		MYRIOPODA.
		1	*Chilopoda*—Centipedes.
		2	*Chilognatha*—Millepedes.
	V.		INSECTA.
		1	*Thysanura*—Spring-tails.
		2	*Orthoptera*—Grasshoppers, Crickets, Cockroaches, Earwigs, Termites, &c.
		3	*Neuroptera*—Dragon-flies, &c.
		4	*Strepsiptera*—Bee-parasites.
		5	*Rhynchota*—Cicadas, Bugs, &c.
		6	*Diptera*—Flies.
		7	*Lepidoptera*—Butterflies.
		8	*Coleoptera*—Beetles.
		9	*Hymenoptera*—Bees and Wasps
G.			MOLLUSCA—Shell-fish.
	I.		LAMELLIBRANCHIATA (Pelecypoda) Bivalves.
	II.		SCAPHOPODA—Elephant's Tusk-shells.
	III.		GASTEROPODA—Univalves.
	IV.		PTEROPODA—Pteropods.
	V.		CEPHALOPODA—Nautili, Cuttle-fishes, &c.
H.			MOLLUSCOIDA.
	I.		BRYOZOA.
	II.		BRACHIOPODA—Lamp-shells.
I.			TUNICATA—Ascidians.
J.			VERTEBRATA.
	I.		ACRANII—Amphioxus.
	II.		PISCES—Fishes.
		1	*Marsipobranchii*—Lampreys and Hags.
		2	*Elasmobranchii*—Sharks, Rays, and Chimæras.
		3	*Ganoidei*—Ganoid Fishes.
		4	*Teleostei*—Bony Fishes.

Sub-Kingdom.	Class.	Order or Sub-Class.	
	III.		DIPNOI—Ceratodus.
	IV.		AMPHIBIA—Frogs, Toads, Newts, and Salamanders.
	V.		REPTILIA—Reptiles.
		1	*Ophidia*—Snakes.
		2	*Lacertilia*—Lizards.
		3	*Crocodilia*—Crocodiles.
		4	*Chelonia*—Tortoises and Turtles.
		5	*Proterosauria* }
		6	*Thecodontia* }
		7	*Dinosauria* } Extinct Reptiles.
		8	*Ornithoscelida* }
		9	*Pterosauria* }
		10	*Enaliosauria* }
	VI.		AVES—Birds.
		1	*Carinatæ.*
		2	*Ratitæ.*
	VII.		MAMMALIA—Mammals.
	a.		Aplacentalia :
		1	*Monotremata*—Platypus and Echidna.
		2	*Marsupialia*—Marsupials.
	b.		Placentalia :
		1	*Non-Deciduata*—Ant-eaters, Sloths, and Armadillos, Whales, Hoofed Quadrupeds.
			Deciduata—Elephants, Rodents, Carnivores, Bats, Lemurs, Apes, Man.

Plants.

A.			THALLOPHYTA.
	I.		PROTOPHYTA—Yeast-plant, Bacteria, &c.
	II.		LYGOSPOREÆ—Desmids, Diatoms, Moulds.
	III.		OOSPOREÆ—Fucoids, Conferoids, &c.
	IV.		CARPOSPOREÆ—Red Sea-weeds, Stone-worts, Lichens, Fungi, &c.
B.			MUSCINEÆ.
	I.		HEPATICEÆ—Liver-worts.
	II.		MUSCI—Mosses.
C.			VASCULAR CRYPTOGAMS.
	I.		EQUISETINEÆ—Horse-tails.
	II.		FELICINEÆ—Ferns, &c.
	III.		DICHOTOMEÆ—Club-mosses.
D.			PHANEROGAMS.
	I.		GYMNOSPERMS—Conifers and Cycads.
	II.		ANGIOSPERMS—Ordinary Flowering Plants.
		1	*Monocotyledons.*
		2	*Dicotyledons.*

CHAPTER VIII.

Population.

THE Population of Tasmania on 31st December, 1889, was estimated as follows:—

	No.	Per cent.
Males	80,809	53·35
Females	70,671	46·65
Persons	151,480	100·00

This shows an increase as compared with the previous year of 2780 males, 2551 females, and 5331 persons, or a total increase for the year of 3·65 per cent. Of the total increase 2659, or 49·88 per cent., was due to natural causes, *i.e.*, excess of births over deaths; and 2672, or 50·12 per cent., was due to the excess of immigration over emigration.

The following abstract shows the progress made during the last 49 years:—

PROGRESS of Population since 1850.

	Population on 31st Dec.	Average (+) Increase, or average (−) Decrease per year, during the year or period of Five Years.			Percentage of yearly + Increase or − Decrease.
		Due to natural causes.	Migration.	All causes.	
1850	71,742	—	—	—	—
1855	69,962	+ 758	—1114	— 356	—0·50
1860	87,775	+1669	+1894	+3563	+5·09
1865	95,201	+1698	— 213	+1485	+1·69
1870	100,765	+1551	— 438	+1113	+1·17
1875	105,484	+1451	— 871	+ 580	+0·57
1880	114,762	+1634	+ 586	+2220	+2·14
1885	133,791	+2327	+1479	+3806	+3·29
1886	137,211	+2651	+ 769	+3420	+2·56
1887	142,478	+2575	+2692	+5269	+3·84
1888	146,149	+2741	+ 930	+3671	+2·58
1889	151,480	+2659	+2672	+5331	+3·65
25 years ending 1875	...	...	...	...	+1·56
14 years ending 1889	...	...	...	...	+2·62
39 years ending 1889	...	...	...	...	+1·94
5 years ending 1889	...	...	...	...	+3·02

From the preceding table it will be seen that the progress of Population was slow and fluctuating during the twenty-five years ending in the year 1875,—only averaging, on the whole, an increase of 1·56 per cent. per year. For the last 14 years, however, there has been steady progress, and the average increase per year rose to 2·62 per cent.;

and this progress is still more marked during the last five years by the yearly increase rising to an average of 3·02 per cent., which, if continuous in the future, will double the population in 23·30 years.

The Population of Australasia as a whole has increased from 1,835,907 to 3,786,827 during the last 21 years, that is, equal to 1,950,920, or a continuous yearly rate of 3·51 per cent., or doubling the population in a period of 20·10 years.

The causes which chiefly operated against the progress of population in Tasmania in the period 1850 to 1875—especially the first five years—was the discovery of the rich gold fields in Victoria about the years 1851–3. Owing to this great attraction immense numbers of persons from all parts of the world flocked to the new El Dorado of the Southern Hemisphere. Tasmania, from its proximity to Victoria, was most specially affected, and a partial exodus of the population, with flocks and herds, at once began, and continued in a lessening degree for many years after. The renascent period in Tasmania may be said to have begun when, in the year 1871, the important discovery of tin at Mount Bischoff by Mr. James Smith drew the attention of the people to the investigation of the rich mineral resources within the Colony. The investigations of explorers were soon rewarded, for soon after other rich tin deposits in the North-east were discovered; and, at the same time, gold was obtained in payable quantities in several districts, notably at the Black Boy, Nine Mile Springs, and Beaconsfield.

Following upon these important disclosures came the discovery of tin, gold, bismuth, lead, silver, antimony, coal, iron, lime, and other important minerals in various parts of the Island; and, recently, the discovery of extraordinary rich deposits of silver at Mount Zeehan, Heazlewood River, and Mount Dundas promises to contribute very largely to the growing prosperity of the Colony. The knowledge that the Colony possessed such vast stores of natural resources also had an important influence in promoting its development in other directions. The Government were encouraged to enter upon an extensive scheme of railways and other public works necessary to open up the Crown lands and to promote settlement, with the effect that, whereas in 1871 there were few roads and no railways, in the year 1889 there were 5623 miles of roads and 441 miles of railway. Within the same time a sum over £3,500,000 was expended in this direction. To these combined causes must be ascribed the more rapid progress of population during the last few years as compared with the earlier period already referred to.

Surplus of Birth-rate over Death-rate.

The following table shows the surplus of birth-rate over death-rate in Tasmania during the eleven years ending with the year 1889:—

Year.	Annual Birth-rate per 1000 Persons living.	Annual Death-rate per 1000 Persons living.	Surplus of Birth-rate over Death-rate per 1000 Persons living.
1879	32·04	15·18	16·86
1880	32·90	16·17	16·73
1881	33·40	14·77	18·73
1882	33·50	15·82	17·68
1883	34·24	17·06	17·18
1884	35·66	15·50	20·16
1885	35·08	15·40	19·68
1886	34·15	14·58	19·57
1887	33·86	15·45	18·41
1888	33·10	14·11	18·99
1889	31·97	14·10	17·87
Mean for Eleven years	33·63	15·29	18·35

The surplus of births over deaths during the last eleven years is equal to 18·35 *per* 1000 *persons living*. This factor is a most important one, as in itself it is a very sensitive index of the health, vigour, and prosperity of the people, whether due to the absence of virulent diseases, the increase of the general health, or the relative increase of the numbers of the young and vigorous as compared with the old and feeble. As regards the last five years (year 1889 excepted), it is satisfactory to note that the analysis of the causes producing the extraordinary surplus shows that it is due to a combination of all the beneficial influences, *i.e.*, a relatively high birth-rate for Tasmania, indicating prosperity, or an increase in the relative numbers of the young and vigorous, in the population as compared with the aged, together with a comparatively low death-rate, indicating a healthy year.

Since the last temporary exodus from Tasmania, upon the discovery of the gold fields in Victoria in 1853, the proportion of aged persons over 60 was abnormally high; and this fact alone was sufficient to explain the relative low birth-rate as compared with the neighbouring Colonies, where, on account of the greater expanse of territory, the lower density of population, and the consequent greater attraction offered to immigrants, the birth-rate has been considerably higher. It is probable that the gradual increase in the birth-rate in Tasmania within the last few years is owing to the diminishing proportion of old age in the total population. This diminution of the proportion of old age, again, is no doubt greatly due to the greater proportional augmentation of the young and vigorous section from immigration; although, as the proportion of ages over 60 was abnormally high, it is also to be expected that the more steady development of the Colony recently, and the effect of natural causes, would tend to reduce the proportion of old age to its normal level.

Rate of Natural Increase in various Countries.

In England, owing principally to the much higher death-rate, the surplus of Births over Deaths has only averaged 13·01 per 1000 persons

during the 31 years ending 1883. The surplus of Births over Deaths in England, nevertheless, is generally greater than in the remaining principal countries of Europe.

It is of considerable interest to observe the wide difference even among the most highly cultured nations as regards the rate of increase arising out of the variations in their respective birth-rates and death-rates. The following table not only shows the average birth-rate and death-rate in various countries, but also the direct effect upon the growth of the population in the respective countries from the surplus of the births over deaths :—

States.	Persons per square mile.	Percentage Persons living over 60 years of age. (Census 1881.)	Annual Birth-rate per 1000 Persons living.	Annual Death-rate per 1000 Persons living.	Surplus of Birth-rate over Death-rate per 1000 Persons living.
Europe—					
Norway..... 1888	16·0	...	30·7	16·9	13·8
England and Wales ..... „	492	7·5	30·6	17·8	12·8
German Empire „	...	...	36·7	23·8	12·9
Prussia ..... „	...	...	38·0	23·1	14·9
The Netherlands „	...	...	33·7	20·4	13·3
Sweden 1887	...	...	29·7	16·1	13·6
Denmark 1888	...	...	31·6	19·7	11·9
Belgium..... „	...	...	29·4	20·3	9·1
Austria ..... „	...	...	37·9	29·2	8·7
Spain ..... „	...	...	...	...	...
Italy ..... „	...	...	36·6	26·8	9·8
Switzerland..... „	190	...	27·7	19·9	7·8
Hungary.....1886	...	...	45·2	32·1	13·1
France 1888	...	...	23·1	21·8	1·3
Australasia—					
New Zealand 1889	5·94	2·72	30·07	9·40	20·67
South Australia „	·35	4·13	32·71	11·10	21·61
New South Wales „	3·61	4·31	33·73	13·43	20·30
Queensland..... „	·61	1·87	36·27	15·44	20·83
Western Australia ..... „	·04	5·12	37·02	14·19	22·83
Tasmania ..... „	5·78	8·04	31·97	14·10	17·87
Victoria ..... „	12·72	4·65	32·92	17·56	15·36
Mean for Australasia ..... „	1·20	...	33·04	14·04	19·00

Notwithstanding the variation between the extremes, it will readily be observed that the surplus of births over deaths in each group continues to be very much higher in the young Colonies of Australasia than in the older States of Europe. Why this is so is a problem depending upon exact knowledge of the combinations of ever varying influences, among which may be enumerated—climate ; racial vitality ; relative longevity ; density of population ; disease ; war ; social morality ; immigration ; imperfect or varying modes of registration. In varying degrees, one and all of these influences are constantly in operation, but it would be a difficult matter to measure the effect of most of them with

any degree of satisfaction. The condition of France stands out in a most remarkable manner in contrast with all countries in its exceptionally low birth-rate.

It is also of interest to note that a *low death-rate*, whether due to climate, sanitary provision, or racial vitality, has, if anything, a greater influence in producing a high surplus of births over deaths than even a high birth-rate.

The very much larger surplus of births over deaths in the Colonies is mainly due to three great causes—viz. (1) the small percentage of persons living over 60 years of age (Tasmania alone excepted) directly lessening the death-rate and increasing the birth-rate; (2) the prevailing favourable climate; (3) the low density of population. Why the surplus of births over deaths appears lower in Tasmania than in some of the neighbouring Colonies is explained satisfactorily by the extraordinarily large percentage of persons living over 60 years of age—viz., 8·04 per cent.

Further particulars relating to population are given in the following comparative table:—

PROGRESS of Population in Australasian Colonies by Quinquenniads since 1869.

	Area, square Miles.	Population.				
		1869.	1874.	1879.	1884.	1889.
	Actual.			Numerical.		
Victoria	87,884	699,790	783,274	840,620	946,045	1,118,028
New South Wales	310,700	481,148	574,943	709,459	903,948	1,122,200
Queensland	668,497	109,897	163,517	217,851	309,913	406,658
South Australia	903,690	181,146	204,623	259,460	312,781	324,484
Western Australia	1,060,000	24,785	26,209	28,668	32,958	43,698
Tasmania	26,215	101,592	104,176	112,469	130,541	151,480
New Zealand	104,471	237,249	341,860	463,729	564,304	*620,279
Australasian	3,161,457	1,835,907	2,198,602	2,632,256	3,200,490	3,786,827
	Relative.			Per square mile.		
Victoria	3⅓	7·97	8·92	9·57	10·77	12·72
New South Wales	12	1·05	1·85	2·28	2·91	3·61
Queensland	25½	0·16	0·24	0·33	0·46	0·61
South Australia	34	0·20	0·23	0·29	0·35	0·35
Western Australia	40	0·02	0·02	0·03	0·03	0·04
Tasmania	1	3·88	3·97	4·29	4·98	5·78
New Zealand	4	2·27	3·27	4·44	5·41	5·94
Australasian	120½	0·58	0·70	0·83	1·01	1·20

* Exclusive of 41,969 Maoris.

Tasmania is by far the smallest Colony in the group, being only about a twelfth part of the size of New South Wales, and about $\frac{1}{120}$th the size of Australasia. In density of population (5·78 per square mile), however, she stands third, being 2·17 persons per square mile above New South Wales; and, although only $\frac{1}{12}$th part of the size of that Colony, her population bears to it the proportion of about $\frac{1}{7}$th; or about $\frac{1}{25}$th of the total population of Australasia.

Racial Composition.

Racial Composition of the Population of Tasmania.

So far as the place of birth gives evidence regarding racial composition, the following summary taken from the last Census (1881) may be of interest:—

Birth Places.	Per cent. to Total Population.
Tasmania	69·13
Other Australasian Colonies	3·44
England and Wales	14·96
Scotland	3·24
Ireland	6·21
Other British Possessions	0·76
Foreign Countries	1·93
Not specified	0·33
Total	100·00

Practically, the proportion of births for each country is the only guide to the ultimate racial origin of the entire population.

Conjugal Condition in Tasmania.

The following summary shows the proportion of persons living under Conjugal conditions at the time of the last Census:—

	Per cent. total Population.	
	Under 20 Years.	All Ages.
Persons married	0·30	30·14
Persons widowed	...	4·63
Persons divorced	...	0·01
Persons never married	49·36	65·16
Persons unspecified	...	0·06
	49·66	100·00

Proportion of Women in Australasia between the Ages of 15 and 45, (reproductive period).

	Per cent. to Total Females.
South Australia, 1881	45·61
Victoria, 1881	45·41
New South Wales, 1881	45·08
Queensland, 1881	44·94
Tasmania, 1881	44·34
New Zealand, 1886	44·28
West Australia, 1881	43·99

Occupations.

Occupations of the People in Tasmania.

At the last Census, taken on 3rd April, 1881, Tables were prepared showing the proportions of the various classes of Occupations. Upon these proportions the following summary has been prepared

showing the probable number of persons in each class for the Year 1889:—

OCCUPATIONS, Year 1889.

Classes.	NUMERICAL.			PERCENTAL.		
	Males.	Females.	Total.	Males.	Females.	Total.
Breadwinners.						
Professional	2036	1032	3075	2·52	1·46	2·03
Domestic Service	1543	5371	6892	1·91	7·60	4·55
Commercial	4808	375	5196	5·95	0·53	3·43
Agricultural	21,536	4283	25,873	26·65	6·06	17·08
Industrial	22,732	2544	25,343	28·13	3·60	16·73
Property and Rank	388	360	742	0·48	0·51	0·49
Total Breadwinners	53,043	13,965	67,121	65·64	19·76	44·31
Dependents, wives, children, &c.	27,766	56,706	84,359	34·36	80·24	55·69
Grand Total	80,809	70,671	151,480	100·00	100·00	100·00

Thus, of the total Population it is estimated that 67,121, or 44·31 per cent., are breadwinners, and 84,359, or 55·59 per cent., dependents, chiefly consisting of children and wives not engaged beyond the duties of the home circle. Of the 67,121 breadwinners, 53,043, or 79·03 per cent., are males, and 13,965, or 20·81 per cent., are females.

The dominant class in Tasmania, as in the neighbouring Colonies, is engaged in Agriculture.

PROPORTIONS of the Five principal Classes of Breadwinners in various Countries compared.

Percentage to Total Population.

	Population last Census 1 = 1000.	Professional.	Domestic.	Commercial.	Industrial.	Agricultural.	Total of Five Classes.
United Kingdom—							
England and Wales	26,094	2·4	6·9	3·7	24·5	5·3	42·8
Scotland	3735	2·6	4·7	3·5	24·4	7·0	42·2
Ireland	5174	2·8	8·2	1·4	13·3	19·0	45·7
Total United Kingdom	35,003	2·7	7·0	3·3	23·0	7·5	43·5
Six Colonies of Australasia—							
Victoria	862	1·6	4·5	4·1	18·8	14·5	43·5
Queensland	213	1·4	5·0	5·1	18·3	15·7	45·5
South Australia	280	1·4	4·1	4·8	16·5	12·6	39·4
Western Australia	30	1·6	3·9	5·1	12·6	16·1	39·3
Tasmania	116	1·5	4·6	3·4	16·5	16·9	42·9
New Zealand	490	1·5	4·1	4·3	16·8	11·2	37·9
Total of Six Colonies	1991	1·5	4·4	4·4	17·7	13·7	41·7

PROPORTIONS of the Five principal Classes of Breadwinners—*continued.*

	Population last Census 1 = 1000.	Professional.	Domestic.	Commercial.	Industrial.	Agricultural.	Total of Five Classes.
United States of America	50,155	1·8	6·3	3·6	7·6	15·3	34·6
Prussia	27,279	2·1	3·2	3·3	13·0	17·0	38·6
France	37,321	1·8	6·3	4·2	12·0	18·0	42·3
Austria	22,144	1·9	4·0	2·0	10·0	28·0	45·9
Belgium	5520	3·0	9·0	4·4	17·2	14·6	48·2
India	250,891	1·3	1·1	1·4	14·6	28·0	46·2
Totals and Averages	433,304	1·6	3·0	2·3	13·3	23·2	43·4

It will be seen from this comparison that broadly there is a general agreement in the proportion which each class bears to the rest. The only abnormal proportions in the Industrial and Agricultural classes, as in the United Kingdom and India, are due to the special centralisation of Manufactures in the one country and Agriculture in the other. In all such cases the local creation is beyond the requirements of the local population. These five classes embrace on the average within 0·8 per cent. of all breadwinners.

AGES.

Proportion of Persons living under each Age Group in Tasmania.

At the last Census the Proportions of Persons living under each Age Group were as under :—

Age Group.	Males.	Females.	Persons.
All Ages.	52·86.	47·14.	100·00.
0–5	13·29	14·79	13·99
5–10	11·89	12·77	12·31
10–15	11·44	12·22	11·81
15–20	10·96	12·22	11·55
20–25	9·77	10·88	10·29
25–35	11·93	12·05	11·99
35–45	8·26	9·19	8·69
45–55	8·32	7·66	8·01
55–65	7·41	4·80	6·23
65–75	4·56	2·35	3·52
75 & over	1·78	0·83	1·34
Not specified	0·39	0·14	0·27
	100·00	100·00	100·00

For all ages under 45, the proportion of Females greatly exceeded the Males; for ages over 45 the proportion of Males exceeded the Females. The numbers living over 65 are proportionately much

above the average of the other Colonies, as indicated by the following Summary :—

PROPORTION of Persons living under Principal Age Groups in various Countries.

Country.	0-5.	5-20.	20-45.	45-65.	65 and over.
Victoria 1881	13·41	37·39	31·77	14·98	2·45
New South Wales ... „	14·84	35·14	36·26	11·30	2·46
Queensland ..... „	14·85	31·86	40·73	9·76	1·35
South Australia ..... „	14·89	34·60	37·27	10·86	2·34
Western Australia... „	13·91	34·66	32·04	16·33	2·49
New Zealand ..... „	15·01	36·40	34·34	12·05	1·81
Tasmania..... „	13·99	35·67	30·97	14·24	4·86
England and Wales . „	13·6	32·7	34·8	14·3	4·6
Scotland ..... „	13·7	33·0	34·2	14·1	4·9
Ireland..... „	11·1	34·7	32·2	15·6	6·2
France ..... „	9·2	26·1	36·1	20·5	8·1
United States 1880	13·4	33·8	36·3	13·0	3·5

A more instructive analysis of the composition of the Population of various Countries under three important age groups, is contained in the following summary :—

THREE principal Age Groups in various Countries compared.

	Date of Census.	0-15.	15-45.	45 and above.	Total.
Victoria	1881	38·97	43·60	17·43	100*
New South Wales	1881	39·87	46·37	13·76	100*
Queensland	1881	38·35	49·19	11·11	100*
South Australia	1881	38·84	47·92	13·20	100*
Western Australia.....	1881	38·32	42·29	18·82	100*
New Zealand	1881	41·23	44·52	13·86	100*
Tasmania.....	1881	38·11	42·52	19·10	100*
England.....	1881	36·40	44·80	18·80	100
Scotland.....	1881	36·56	44·33	19·11	100
Ireland.....	1881	35·04	43·07	21·83	100
France	1882	26·74	44·69	28·57	100
United States.....	1880	37·15	50·64	12·21	100
Highest.....	...	N. Zealand 41·23	U. States 50·64	France 28·57	—
Lowest.....	...	France 26·74	W. Australia 42·2	Queensland 11·11	—

* These totals include a small percentage of unspecified ages.

The effect of the much larger natural increase in group 0-15 is at once seen in the Australasian group in comparison with the proportions living under the same group in older and more densely populated countries, especially so as regards France. Immigration and higher

natural increase have an important influence in swelling the 15-45 group, and thereby diminishing the relative proportions of the 45 and above group. This is specially noticeable in the case of the United States and New Zealand.

Emigration and a low rate of natural increase have the contrary effect upon these groups, as exemplified in the cases of France and Ireland.

RELATIVE Strength of the Australasian Male Population (Census 1881).

Per cent. to Total Males.

	Supporting Ages.		Dependent Ages.	
	Soldier's Age, 20 - 40.	15 - 65.	0 - 15.	65 and over.
Queensland	37·04	63·20	33·13	1·53
South Australia	35·10	61·06	36·54	2·34
New South Wales	32·20	61·27	36·92	2·81
New Zealand	29·24	58·95	38·56	1·92
Tasmania	25·84	56·69	36·62	6·30
Western Australia	25·50	62·51	33·65	3·26
Victoria	25·32	60·27	37·91	2·82

The relative number of males in each Colony at the vigorous and supporting ages places Queensland first and Victoria last as regards the Soldier's Age group, and Queensland first and Tasmania last as regards the whole group, 15-65, embracing those at supporting ages. The very high death-rate of children diminishing the proportion of the 0-15 group, together with the small number surviving over 65 years, are the main influences which give Queensland the doubtful advantage of the premier position as regards relative masculine strength. The abnormal number attaining extreme longevity in Tasmania is the chief cause of her inferior position in the relative number of males in the 15-65 age group.

The males at the soldier's age in Australasia represented 16·47 per cent. of the total population at the last Census 1881, and would represent a strength of about 613,690 effectives at the close of the year 1889.

It would require a total population of 4,285,000 in England and Wales to yield an equal number at the soldier's age.

DISTRIBUTION.

Distribution of Population in Tasmania.

The greater portion of the Population of Tasmania is distributed in the fertile low-lying areas along the northern and eastern sea-board; in the broad tract of fertile country within the watershed of the Tamar and its tributaries, whose chief centre is the City of Launceston in the north; and within the watershed of the Derwent and its tributaries, whose chief centre is the City of Hobart, the Capital, situated at the mouth of the estuary of the Derwent in the south.

There are only two centres which, in so small a population, may

be truly termed Urban Districts—viz., the Cities of Hobart and Launceston. Their relative proportions to the country townships and scattered agricultural settlements are shown in the following Summary for the Census years 1861, 1870, and 1881, and also for the current year 1889.

DISTRIBUTION of Population in Urban and Country Districts, 31st December, 1889.

	Area, sq. miles.	1861.	1870.	1881.	1889.
Numerical.					
Urban Group—					
City of Hobart*	1·98	19,449	19,092	20,704	27,648
City of Launceston*	5·38	10,359	10,668	12,686	16,693
Total Urban Group	7·36	29,088	29,760	33,390	44,341
Country Districts	26,208	60,169	69,568	82,315	107,139
	26,215	89,977	99,328	115,705	151,480
Per Cental.					
Urban Group—					
City of Hobart	0·75	21·62	19·22	17·90	18·25
City of Launceston	2·05	11·51	10·74	10·96	11·02
Total Urban Group*	2·80	33·13	29·96	28·86	29·27
Country Districts	97·20	66·87	70·04	71·14	70·73
Total	100·00	100·00	100·00	100·00	100·00

* Exclusive of Suburbs.

On January 1st, 1890, Hobart, with Suburbs, is estimated at 35,045, or 23·14 per cent.
Ditto, ditto, Launceston, ditto ..... 21,562, or 14·23 ,,

Both ..... 56,607 37·37

From the above analysis it will be seen that the metropolitan population of the chief city bears the proportion of 23·14 per cent. to the total population. This proportion is relatively much smaller than that of Melbourne, Sydney, or Adelaide, these centres being proportionately to their total population about equal to the aggregate of Hobart and Launceston.

PER Cent. Proportion of Metropolitan to Total Population in Australasian Chief Cities.

	1861.	1881	1889.
Melbourne	25·89	32·81	41·01
Sydney	26·70	29·40	34·01
Adelaide	...	37·11	37·52
Hobart	...	23·55	23·14
Perth	...	19·60	20·60
Brisbane	...	14·57	18·11
Wellington	...	4·20	5·33

DISTRIBUTION of Population in Municipal, Police, and Registration Districts of Tasmania on 31st December, 1889, computed on the basis of the Census of 3rd April, 1881.

MUNICIPAL AND POLICE DISTRICTS.		REGISTRATION DISTRICTS.	
Name.	Population.	Name.	Population.
Evandale	3066	Beaconsfield	2418
Fingal	2912	Fingal	2892
Launceston (City)	16,694	George Town, Lefroy	2702
George Town, Portland, Ringarooma	9421	Launceston	21,949
		Evandale	3238
Selby	6497	Portland	2197
Westbury	7067	Ringarooma	3111
		Westbury, Frankford	6378
Total North-Eastern Division	45,657	...	44,885
Deloraine	5402	Deloraine	5389
Emu Bay	4081	Emu Bay, Waratah	4082
Latrobe, Mersey	11,947	Horton	2152
Russell	2154	Mersey, Port Sorell	7521
		Sheffield	1095
		Ulverstone	3371
Total North-Western Division	23,584	...	23,610
Bothwell	1373	Bothwell	1407
Campbell Town	2610	Campbell Town	3547
Green Ponds	1677	Green Ponds	1676
Hamilton, Macquarie	2435	Hamilton, Strahan	2446
Longford	5900	Longford	6758
Longford (South)	239	Oatlands	3955
Oatlands	3956		
Ross	984		
Total Midland Division	19,174	...	19,789
Brighton	2655	Brighton	2655
Carnarvon	322	Clarence	1274
Clarence	1620	Glamorgan	1344
Glamorgan	1213	Gordon	909
Glenorchy	2015	Hobart	35,673
Hobart (City)	27,648	Kingston	1555
Hobart	6024	New Norfolk	4771
Kingborough	2700	Port Cygnet	2036
New Norfolk	4771	Ralph's Bay	347
Richmond	2842	Richmond	2842

DISTRIBUTION of Population—*continued.*

MUNICIPAL AND POLICE DISTRICTS.		REGISTRATION DISTRICTS.	
Name.	Population.	Name.	Population.
Sorell	2727	Sorell	2770
Spring Bay	1307	Spring Bay	1262
		Tasman's Peninsula	323
		Victoria	964
Total South-Eastern Division.	55,841	...	58,725
Franklin	7221	Southport, Esperance	1908
		Franklin, Geeveston	2562
Total South-Western Division	7221	...	4470
TOTAL FOR TASMANIA ...	151,480	...	151,480

MISCELLANEOUS PARTICULARS.

Population of Tasmania.

SUMMARY of various Analyses.

	1889.
Mean population	148,815
Total population, 31st December	151,480
Ditto per square mile	5·78
Males on 31st December	80,809
Females ditto	70,671
Males on 31st December, per cent. to total	53·35
Females on ditto, ditto	46·65
No. of children at School age 7–14, 31st December	24,979
Persons under 15 years of age, ditto	57,727
Males 21 years of age and over, ditto	40,536
Ditto per cent. to total population, ditto	26·76
Males at soldier's age (20 – 40)	20,898
Females living—15 to 45 Age-group	31,654
Householders, 31st December	28,636
Ditto per cent. to total population	18·90
Electors on Roll, Legislative Council	6420
Ditto per cent. to total population	4·24
Ditto ditto to males 21 years of age and over	15·29
Electors House of Assembly	26,054
Ditto per cent. to total population	17·20
Ditto ditto to males 21 years of age and over	62·07
Persons to each inhabited dwelling-house	5·29
Excess of Births over Deaths	2659
Excess of Immigration over Emigration	2672
Total increase over previous year, per cent.	3·65

AREA AND POPULATION OF BRITISH POSSESSIONS.

Country.	Area.	Population.	Persons per Square Mile.
Europe—United Kingdom :			
England and Wales 1888	58,764	28,628,804	492
Scotland ..... „	29,820	4,034,156	135
Ireland..... „	32,531	4,790,614	147
Total United Kingdom „	121,115	37,453,574	310
Gibraltar..... *	2	24,139	12,069
Heligoland ..... *	1	2001	2001
Malta 1888	119	162,423	1365
Total Europe	121,237	37,642,137	310
Asia :			
Aden..... ...	66	34,711	526
Ceylon.....1881	25,365	2,763,984	109
Cyprus.. 1881	3584	186,173	52
Hong Kong.....1888	30	215,800	7193
India, British 1881	868,314	198,790,853	229
Labuan 1887	30	5883	196
North Borneo..... *	27,500	175,000	6
Perim ..... *	7	150	21
Straits Settlement 1887	1472	537,000	365
Total Asia	926,368	202,709,554	219
Africa :			
Ascension ..... *	35	200	6
Cape Colony 1888	213,917	1,428,729	6
Gambia 1881	69	14,150	205
Gold Coast 1887	29,401	1,405,450	48
Lagos 1881	1069	75,270	70
Mauritius 1888	713	369,302	518
Natal 1888	18,750	481,361	26
St. Helena 1881	47	5059	108
Sierra Leone 1888	3000	75,000	25
Total Africa	267,001	3,854,521	14
America :			
Bermudas 1888	19	15,534	817
Canada.....1888	3,470,257	4,946,497	1
British Guiana 1888	109,000	278,477	3
Newfoundland 1889	42,000	193,121	5
West Indies—			
Bahamas ..... *	4466	45,701	10
Turk's Island 1881	169	4732	28
Jamaica 1888	4193	613,376	146
Windward Islands..... „	784	340,392	434
Leeward Islands.....1881	665	119,546	180
Trinidad 1888	1754	189,566	108
Total America	3,633,307	6,746,942	2·

AREA and Population of British Possessions—*continued.*

Country.	Area.	Population.	Persons per Square Mile.
Australasia:			
Victoria 1889	87,884	1,118,028	12·72
New South Wales ..... „	310,700	1,122,200	3·61
Queensland ..... „	668,497	406,658	·61
South Australia ..... „	903,690	324,484	·35
Western Australia ..... „	1,060,000	43,698	·04
Tasmania ..... „	26,215	151,480	5·78
New Zealand ..... „	104,471	620,279	5·94
Total Australasia	3,161,457	3,786,827	1·20
South Seas:			
Fiji 1889	7741	124,919	16·14
Falkland Islands 1888	6500	1890	·29
Total South Seas..... ...	14,241	126,809	8·9
Total British Possessions	8,123,611	254,865,790	31·

AREA AND POPULATION OF FOREIGN COUNTRIES.

The following table shows the Area and Population of the principal Foreign Countries :—

AREA and Population of Foreign Countries.*

States.	Estimated Area, Sq. Miles.	Year.	Population, estimated or ascertained.	Persons per Square Mile.
Europe—	In thousands.	Census*	In thousands.	
Austro-Hungary	240·9	1886	39,641	164
Belgium	11·4	„	5910	520
Denmark	14·1	„	2108	149
„ Colonies of.....	86·6	1880	116	1
France	204·2	*1886	38,219	187
„ Colonies of	1788·3	1882	16,460	9
German Empire	211·1	*1885	46,856	221
Greece	25·0	*1879	1979	79
Italy	114·4	1886	29,944	262
Montenegro	3·5	*1879	220	62
Netherlands	12·6	1886	4391	347
„ Colonies of	766·1	1886	28,687	37
Portugal	34·0	*1881	4708	138
„ Colonies of.....	705·2	...	3339	5
Roumania	48·3	1887	5500	114
Russia in Europe	2095·5	1884	88,205	42
„ Asia.....	6548·6	„	15,866	2
Total Russian Empire	8644·1	„	104,071	12
Servia	18·8	*1885	1937	103
Spain	197·7	„	17,226	87
„ Colonies of.....	163·9	...	9996	61
Sweden and Norway	294·2	1885	6676	23

* These figures are taken from "The Statistical Year Book" of Canada for the year 1889.

AREA and Population of Foreign Countries—*continued.*

States.	Estimated Area, Sq. Miles.	Year.	Population, estimated or ascertained.	Persons per Square Mile.
	In thousands.	Census*	In thousands.	
Switzerland	15·9	1886	2941	185
Turkey in Europe	125·3	,,	9277	74
,, Asia	729·4	,,	16,174	22
,, Africa	398·9	,,	1000	2
,, Egypt	11	,,	6817	620
Total Turkish Empire	1264·5	...	33,268	26
Total Europe	24,773·8	...	541,533	22
Asia—				
China	1298	1885	383,000	295
,, Dependencies	2882	,,	21,180	7
Corea	82	1886	12,000	146
Japan	148	,,	38,151	257
Persia	628	1881	7653	12
Siam	250	1886	6000	24
Total Asia	5288	...	467,985	88
Africa—				
Liberia	14·3	1886	1068	75
Madagascar	228·5	,,	3500	15
Morocco	219	,,	5000	23
South African Republic	114·4	,,	360	3
Tunis	42	,,	1500	36
Zanzibar	·6	,,	240	384
Total Africa	618·8	...	11,668	19
America—				
Argentine Republic	1125	1887	3435	3
Bolivia	772	1886	1952	3
Brazil	3219	,,	12,922	4
Chili	293·9	*1885	2257	8
Colombia	504·8	1881	3879	8
Costa Rica	23·2	*1883	182	7
Ecuador	248·4	*1885	1005	4
Guatemala	46·8	1887	1358	29
Hayti	10·2	1886	572	56
Honduras	46·4	1884	458	10
Mexico	742·1	1882	10,448	14
Nicaragua	49·5	1883	276	6
Paraguay	92	*1887	240	3
Peru	463·7	1876	2700	6
Salvador	7·2	*1886	651	70
San Domingo	18	1887	504	28
United States	3603	...	60,151	17
Uruguay	73·5	1886	596	8
Venezuela	632·7	1884	2122	3
Total America	11,972	...	105,978	9
Oceanica	·7			
Hawaii	6·7	*1884	81	12
Total	42,659	...	1,127,244	26

* These figures are taken from "The Statistical Year Book" of Canada for the year 1889.

POPULATION OF THE WORLD.

According to Hubner's estimate, quoted by Mr. Hayter in the Year Book of Victoria, the Population of the World in 1886 was :—

Europe	338,710,000
Asia	830,898,000
Africa	199,248,000
America	111,511,000
Australasia and Polynesia	4,702,000
Polar Land	82,000
Total	1,485,151,000

According to the later account of Professor Levasseur, quoted by Mr. Coghlan in his admirable statistical account of "The Seven Colonies of Australasia, 1890," the relative density of the great divisions of the World were estimated as follows :—

	Area in Square Miles.	Population in Millions.	No. per Square Mile.
Europe	3,800,000	347	88·7
Asia	16,000,000	789	49·3
Africa	12,000,000	197	16·4
North America	9,000,000	80	8·8
South America	7,000,000	32	4·5
Oceania	4,200,000	38	9·0
The World	52,000,000	1483	28·7

CHAPTER IX.

Vital Statistics.

CHAPTER IX.

Vital Statistics.

BIRTHS.

During the year 1889, the number of Births registered was 4757, of which 2438, or 51·25 per cent., were males, and 2319, or 48·75 per cent., females. Thus the males were in excess of females by 119, or 5·13 per cent.

The following abstract shows the comparison with the nine years previous in the Urban and Country Districts of Tasmania :—

Births in Urban and Country Districts of Tasmania, 1880–1889.

No. of Births.

	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	Yearly Average.
Urban Districts—											
Hobart	900	887	917	951	1131	1103	1108	1057	1039	1054	1015
Launceston	491	533	582	676	698	734	712	749	748	722	664
Total Urban Districts	1391	1420	1499	1627	1829	1837	1820	1806	1787	1776	1679
Country Districts	2348	2498	2544	2632	2749	2800	2807	2930	2990	2981	2728
Total for Tasmania	3739	3918	4043	4259	4578	4637	4627	4736	4777	4757	4407
Birth-rate per 1000 of Mean Population	32·90	33·40	33·50	34·24	35·66	35·08	34·15	33·86	33·10	31·97	33·77

From the preceding table it will be observed that the total birth-rate is less than that of the former year by 1·13 per 1000 persons, and less than the average of the last decade by 1·80 per 1000 persons. The decrease over the first year of the decade is equal to ·93 births per 1000 persons living. The following is a comparative abstract of the birth-rates in the Australasian Colonies in the order of highest birth-rates:—

Birth-rate in Australasia, 1889.

	Births per 1000 Persons living, 1889.	Density of Population, 1889.	Percentage of Ages over 60 to Total Population, 1881.
Western Australia.	37·02	0·04	5·12
Queensland	36·27	0·61	1·87
New South Wales...	33·73	3·61	4·31
Victoria.....	32·92	12·72	4·65
South Australia	32·71	0·35	4·13
Tasmania	31·97	5·78	8·04
New Zealand	30·07	5·94	2·72

It must be borne in mind that while the birth-rate in a particular country invariably increases with an improvement in its material condition, the absolute difference between different countries is not always to be taken as the measure of relative prosperity between them. In the earlier stages of young communities the absolute height of the birth-rate is greatly influenced by the proportion which the native-born of the population bear to the whole, and thus it almost invariably follows that in those Colonies where the native born are fewer in proportion the birth-rate index is relatively high, and, conversely, where the native-born are proportionately more numerous the birth-rate is invariably low. This, in a large measure, is due to the circumstance that a population mainly composed of immigrants contains a larger proportion of adults and married persons in the full vigour of life. As a Colony becomes more settled the number of persons living between 20 and 50 bears a smaller proportion to the whole from the natural increase in numbers of the young and aged. Hence it may follow that the numbers born relative to parents may be high when the birth-rate per total population is low, and *vice versâ*. Therefore the older settlement and the larger proportion of persons over 60, combined with a relative density of population per square mile of area, are sufficient to account for the lower birth-rate in Tasmania and Victoria as compared with the younger or less densely populated sister Colonies of Australasia. The percentages in relation to population, however, are not now of much value, as they are based upon the proportions ascertained by the Census of 1881. Some of the differences are probably due to erroneous estimates of population, the extent of which can only be ascertained at the coming Census (April 5, 1891.)

The following table shows the birth-rate in each separate division of the Colony:—

Birth-rate in various Districts of Tasmania, 1885–1889.

Districts.	Percentage of Persons living over 60 years of age.—(Census 1881).	Birth-rate per 1000 living Persons.				
		1885.	1886.	1887.	1888.	1889.
Urban Districts.....	9·19	37·78	36·76	35·60	32·55	31·37
Country Districts—						
North-Western Division	6·03	39·66	37·48	40·41	41·39	43·85
South-Western Division	7·05	37·40	34·52	31·85	32·63	33·70
North-Eastern Division..	5·99	33·33	32·38	31·66	34·04	31·24
Midland Division	8·66	28·11	30·33	27·34	28·91	27·10
South-Eastern Division..	8·90	31·11	29·45	31·00	28·69	25·83
All Tasmania.....	8·04	35·08	34·15	33·86	33·10	31·97

For many years the highest birth-rate has been in the Urban Districts. During the last five years, however, the Urban Districts have actually been surpassed by the District of the North-West, which has been showing rapid progress in material welfare during the last decade. There has been a very rapid increase indeed within the first two groups during the last four years,—that is, in the Urban and North-Western Divisions. Within the South-Western, North-Eastern, Midland, and South-Eastern Country Districts the birth-rate is much lower than in the two divisions first named; and it is noteworthy that in the Midland and Eastern Districts the birth-rate is stationary or declining.

The very large birth-rate in the North-Western Division, 43·85, probably is more largely due to an under-statement of population than to a greater relative proportion of births. It must be borne in mind that, excepting at the time of census taking, there are no means whereby the migration of population within each district can be ascertained; and hence the ordinary method of apportioning equally the excess of immigration over emigration on the basis of former population involves an element of error. If we assume that the real birth-rate is only 35 per 1000 persons—a more probable supposition—then the actual population of the North-Western Division of the Island would have been 28,884 persons at the middle of the year 1889, and not 23,194, as estimated in the ordinary way. Similarly, it is probable, when the census of 1891 is taken, the population of the Midland Districts will be found to be lower by about 4000 persons than the figures given on the basis of the last census proportion.

DEATHS.

The Deaths registered during the year 1889 numbered 2098, of which 1208, or 57·58 per cent., were males, and 890, or 42·42 per cent., were females.

The total number of Deaths during 1889 is absolutely 62 more than the previous year, and relatively (14·10 per 1000 persons living) is 1·24 per 1000 below the average of the last decade.

The following abstract shows the comparison with the nine years previous in the Urban and Country Districts of Tasmania :—

No. of Deaths.

	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	Yearly Average.
Urban Districts—											
Hobart	646	638	683	785	708	741	718	804	715	699	713·70
Launceston	318	355	428	399	474	444	452	485	431	496	428·20
Total Urban Districts	964	993	1111	1184	1182	1185	1170	1289	1146	1195	1141·90
Country Districts.	868	740	795	938	808	851	806	872	890	903	847·10
Total for Tasmania	1832	1733	1906	2122	1990	2036	1976	2161	2036	2098	1989·00
Death-rate per 1000 of Mean Population	16·12	14·77	15·79	17·06	15·50	15·40	14·58	15·45	14·11	14·10	15·24

Seasonal Influence.

The following abstracts show to what extent the varying conditions of each period of the year affect the death-rate, also the comparison with corresponding periods in previous years :—

Deaths per 1000 Persons living.

	1889.	1888.	1889.	
			Increase.	Decrease.
Deaths registered 1st Quarter ending 31st Mar.	4·34	4·01	·33	...
Ditto 2nd Quarter ending 30th June	3·14	3·67	...	·53
Ditto 3rd Quarter ending 30th September	3·31	3·30	·01	...
Ditto 4th Quarter ending 31st December	3·31	3·13	·18	...
Yearly Total	14·10	14·11	...	·01

NUMBER and Percentage of Deaths occurring each Month during the Years 1885, 1886, 1887, 1888, and 1889.

Month.	DEATHS.											
	Quinquennial—1885-9.		Number.					Per Cent. to Yearly Total.				
	No.	Per cent. to Total.	1885.	1886.	1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.
January	227	11·01	244	218	231	225	216	11·98	11·03	10·69	11·05	10·29
February	188	9·12	163	168	200	172	235	8·05	8·50	9·25	8·45	11·20
March	178	8·64	152	161	210	177	198	7·46	8·15	9·72	8·69	9·44
April	158	7·67	146	137	170	170	168	7·17	6·93	7·87	8·35	8·01
May	163	7·91	151	143	188	177	155	7·41	7·24	8·70	8·69	7·39
June	155	7·52	148	148	167	172	142	7·27	7·49	7·73	8·45	6·77
July	178	8·63	192	181	187	157	172	9·43	9·16	8·65	7·71	8·20
August	168	8·15	172	165	153	177	172	8·44	8·35	7·08	8·69	8·20
September	164	7·96	178	167	180	142	151	8·74	8·45	8·33	6·98	7·20
October	163	7·91	171	145	180	145	173	8·39	7·34	8·33	7·12	8·24
November	144	6·99	132	172	138	136	144	6·48	8·71	6·39	6·68	6·86
December	175	8·49	187	171	157	186	172	9·18	8·65	7·26	9·14	8·20
TOTAL	2061	100·00	2036	1976	2161	2036	2098	100·00	100·00	100·00	100·00	100·00

PERCENTAGE to Total Deaths, according to Age, for each Month.

Month.	Under 5 Years.	5 Years and under 65.	65 years and over.
	1889.	1889.	1889.
January	50·00	26·85	23·15
February	46·80	37·45	15·75
March	29·80	44·44	25·76
April	29·76	42·26	27·98
May	22·58	54·84	22·58
June	19·02	47·18	33·80
July	22·09	50·00	27·91
August	19·76	51·16	29·08
September	25·83	47·68	26·49
October	21·38	46·25	31·79
November	40·97	30·56	28·47
December	40·70	37·21	21·51
Yearly Percentage	31·75	42·47	25·69

From these tables it can be seen that particular months have a specially marked influence upon the death-rate. Thus, the months November, December, January, and February, though indicating a higher death-rate for children, are favourable to health as regards more matured persons. Conversely, although May to July over a number of years seem to be the most trying months as regards old age, they would appear generally to be favourable as regards young lives.

Upon the whole, the following shows the order of the several months of the year as regards their influence upon the death-rate, beginning with the lowest:—

PERCENTAGE to Total Deaths in each Month for all Ages.

Mean of Five Years, 1885-9.

1. November	6·99	7. August	8·15
2. June	7·52	8. December	8·49
3. April	7·67	9. July	8·63
4. May	7·91	10. March	8·64
5. October	7·91	11. February	9·12
6. September	7·96	12. January	11·01

Thus, it appears that November is the healthiest month in the year; the least healthy being January, especially as regards infants.

Localities.

In the preceding tables comparisons of the varying effects of the seasons upon the death-rate were made. In the following tables may be traced in like manner the varying influence of Urban and Country localities upon the same during the years 1888 and 1889 in the order of the lower death-rate in the latter year. The comparatively higher death-rate in the two Northern Country Districts, and the lower death-rate in the Midland and Southern Districts, are probably due to erroneous Estimates of Population (as explained on page 186), and not to any material differences of health conditions.

DEATHS in Urban and Country Districts per 1000 persons living, for all Ages.

	1889.	1888.	1889.	
			Increase.	Decrease.
Country Districts—				
South-Western Division	7·97	6·34	1·63	...
South-Eastern Division	8·21	8·47	...	·26
Midland Division	8·48	8·96	...	·48
North-Western Division	11·25	10·89	·36	...
North-Eastern Division	11·36	12·04	...	·68
Total Country Districts	9·79	9·95	...	·16
Urban Districts—				
Hobart	19·95	20·88	...	·93
Launceston	23·00	21·03	1·97	...
Total Urban Districts	21·11	20·61	·50	—
All Tasmania	14·10	14·11	...	·01

Density of Population and Hygiene.

Except as a ideal standard of health, there is not much value in making comparisons between urban and country districts, because density of population is itself an important factor in raising the death-rate. If we examine the mean death-rate of urban and country districts during the year 1889, we find, after making due allowance for differences of age distribution, that the former indicated for ages under 65, 17·34 per 1000, and the latter, 8·03 per 1000; that is, a difference of nearly 116 per cent. This is an enormous difference in favour of country districts. It is true that the centralisation in the urban districts of the sick in hospitals, and of paupers and criminals from all parts of the country, artificially increases the death-rate of the former, and lessens that of the latter, to a much greater extent than happens in countries where hospitals and asylums are more generally distributed. Notwithstanding this, however, and while recognising on the average that the occupations of townspeople are more unhealthy than those of people living in country districts, and making due allowance for the important excess of the age element in urban districts, there is still a very great difference, which is difficult to account for satisfactorily in a young country; and while it is probable that the lower death-rate in country districts is not due to the relative superiority in artificial modes of sanitation as compared with urban districts, it is becoming evident that the closer contiguity of dwellings in towns demands that artificial sanitary measures in the latter should be specially framed to provide for those unfavourable conditions peculiar to all crowded centres of population. In villages and townships the several dwellings, even although more imperfectly conditioned in themselves as regards local sanitary provision, are naturally more perfectly insulated from each other by more or less broad regions of pure air. The poisoned exhalations of every individual dwelling do not spread and become more virulent by

coming into direct contact with the poisoned atmosphere of neighbouring dwellings, but are at once dissipated or purified by that septum of pure air which it is reasonable to infer insulates dwelling from dwelling in thinly populated country districts. In urban districts, on the contrary, the septum of pure air surrounding each dwelling does not exist, or only exists temporarily or imperfectly, and consequently, notwithstanding special medical supervision, purer water supply, and in many cases superior sanitary provisions, the death rate is invariably higher, and the atmosphere of every well-regulated dwelling is more or less in direct contact with the exhalations of every noxious centre within the town. Hence it would appear that the absence of the insulating septum of pure air around town dwellings renders the inmates of every house more liable to the attack of all infectious diseases which may be floating in any part of the atmosphere within the town. Even the otherwise healthy wind may be the agent which directs the fatal effluvia from an unhealthy centre upon a relatively pure and healthy division of the town.

A town dwelling, therefore, unlike country dwellings, is insecure as regards health so long as any centre or dwelling within its boundaries is allowed to vitiate the common undivided atmosphere with poisonous exhalations. A special responsibility therefore rests upon Town Boards of Health to prevent, as far as possible, the creation and spreading of all noxious exhalations anywhere within their province. Improved antiseptic measures should be devised and rigorously enforced in every part of the community.

QUINQUENNIAL Summary of Deaths—under Districts, Classes, and principal Specific Causes—(1885–1889.)

Class.		Hobart District.					Launceston District.					Country Districts.					Tasmania.				
		1885.	1886.	1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.	1885.	1886.	1887.	1888.	1889.
	Classes.																				
1	Zymotic Diseases	94	67	144	92	98	52	64	85	64	78	82	81	121	98	138	228	212	350	254	314
2	Parasitic Diseases	4	1	5	1	4	1	1	3	...	1	7	7	5	3	6	12	9	13	5	11
3	Dietic Diseases	11	11	14	2	6	2	5	6	3	7	24	15	3	14	6	37	31	23	19	19
4	Constitutional Diseases	92	82	97	100	89	54	61	63	46	56	87	83	99	86	107	233	226	259	232	252
5	Developmental Diseases	161	167	185	138	142	65	56	70	66	66	116	109	119	123	119	342	332	374	327	327
6	Local Diseases	300	303	257	280	243	212	210	196	183	208	403	388	370	417	339	915	901	823	879	790
7	Violence	24	28	35	31	28	14	7	19	18	32	54	59	58	69	84	92	94	112	118	144
8	Ill-defined and non-specific	55	59	67	71	89	44	48	43	51	48	78	64	97	80	104	177	171	207	202	241
	TOTAL	741	718	804	715	699	444	452	485	431	496	851	806	872	890	903	2036	1976	2161	2036	2098
	Principal Specific Causes.																				
	Old Age	152	146	166	129	129	58	48	60	65	57	105	93	108	107	100	315	287	334	301	286
	Phthisis	65	46	60	52	39	31	43	40	22	22	46	53	54	42	60	142	142	154	116	121
	Atrophy and Debility	46	49	59	59	77	30	31	27	37	37	48	35	62	56	79	124	115	148	152	193
	Heart Diseases, various	53	46	64	60	56	34	40	31	45	35	58	62	70	71	50	145	148	165	176	141
	Diarrhœa and Dysentery	52	32	52	39	28	26	27	29	13	21	32	44	66	42	68	100	103	147	94	117
	Convulsions	21	17	21	17	16	41	31	34	24	25	83	75	45	65	55	145	123	100	106	96
	Bronchitis	38	33	11	25	17	21	23	13	14	22	36	47	35	47	28	95	103	59	86	67
	Pneumonia	23	43	32	27	16	10	7	15	13	10	29	25	34	41	27	62	75	81	81	53
	Typhoid, &c	14	9	70	37	41	11	25	27	30	40	5	13	15	13	32	30	47	112	80	113
	Apoplexy	20	31	19	25	9	12	8	14	3	11	22	16	18	17	18	54	55	51	45	38
	Paralysis	17	6	9	20	8	12	9	16	13	11	24	21	15	13	6	53	36	40	46	25
	Diphtheria	7	4	13	5	8	2	2	10	8	10	14	6	12	30	25	23	12	35	43	43
	Premature Birth	8	19	16	7	12	6	6	9	1	8	11	12	10	13	18	25	37	35	21	38
	Fractures, Contusions	6	7	12	9	6	4	2	4	2	8	12	8	16	19	9	22	17	32	30	23
	Drowning	7	11	7	7	8	2	1	9	12	6	16	18	14	16	17	25	30	30	35	31
	Dentition	7	3	8	5	10	19	7	7	12	13	9	6	9	9	5	35	16	24	26	28
	All others	205	216	185	192	219	125	142	140	117	160	301	272	289	289	306	631	630	614	598	685

Deaths per 100,000 Persons living.

	Classes.																				
1	Zymotic Diseases	313	223	461	271	280	279	337	436	306	362	98	93	136	110	150	173	156	250	176	211
2	Parasitic Diseases	13	3	16	3	11	5	5	15	...	4	8	8	6	3	6	9	7	9	3	7
3	Dietic Diseases	37	36	45	6	17	11	26	31	14	32	29	17	3	16	6	26	23	17	13	13
4	Constitutional Diseases	307	269	311	294	254	290	321	323	220	260	104	96	111	96	116	176	167	185	161	169
5	Developmental Diseases	537	547	592	406	405	349	300	359	316	306	139	126	134	138	129	258	245	268	227	220
6	Local Diseases	1000	989	823	824	693	1138	1101	1004	875	965	482	454	415	466	368	692	665	588	609	531
7	Violence	80	92	112	91	80	75	37	98	86	148	65	69	65	77	91	70	69	80	82	97
8	Ill-defined and non-specific	184	193	214	209	254	236	252	220	244	223	93	74	109	89	113	134	126	148	140	162
	Total	2471	2352	2574	2104	1994	2383	2379	2481	2061	2300	1018	937	979	995	979	1540	1458	1545	1411	1410
	Principal Specific Causes.																				
	Old Age	507	478	532	380	367	311	253	308	311	264	126	108	121	120	108	238	212	239	215	192
	Phthisis	217	151	160	153	111	166	226	205	105	102	55	62	61	47	65	107	105	110	80	81
	Atrophy and Debility	153	160	189	174	219	161	163	138	177	172	57	41	70	63	86	94	85	106	105	130
	Heart Diseases, various	170	147	205	177	158	166	200	158	215	163	68	69	79	79	55	105	105	96	122	95
	Convulsions	70	56	67	50	44	220	163	174	115	116	99	87	50	73	74	109	91	72	73	79
	Diarrhœa and Dysentery	174	105	166	115	78	139	142	149	62	97	39	51	74	47	60	83	76	98	65	65
	Bronchitis	127	108	35	74	47	113	121	67	67	102	43	55	39	53	30	72	76	42	60	45
	Pneumonia	77	141	102	79	78	54	37	77	62	46	35	29	38	46	29	47	55	58	56	36
	Typhoid, &c	46	29	224	109	110	59	132	138	144	186	6	15	17	14	35	23	35	80	55	76
	Apoplexy	67	102	61	74	24	64	42	72	14	51	26	19	20	19	20	41	41	36	31	26
	Paralysis	57	20	26	59	21	64	47	77	62	51	29	24	17	14	6	40	27	27	32	17
	Diphtheria	77	13	42	15	21	11	11	51	38	46	17	7	13	34	27	17	9	25	30	29
	Premature Birth	83	62	51	20	34	32	32	46	5	37	13	13	11	14	20	19	27	25	15	25
	Fractures, &c	73	23	38	26	11	21	11	21	10	37	14	9	18	21	9	17	13	23	21	15
	Drowning	23	36	22	20	21	11	5	46	57	28	19	21	16	18	18	19	22	21	24	21
	Dentition	23	10	26	14	27	10	37	35	57	60	11	7	10	10	5	26	12	10	18	18
	All others	684	708	592	565	623	671	747	717	560	742	360	316	324	323	332	477	467	439	414	460

There can be no doubt that urban and country district death-rates prove that the crowding together of human beings in particular centres is injurious to the health, and although the social needs of modern civilization render it impossible to prevent such aggregation, wise provision may mitigate its attendant evils by reducing this tendency to a minimum. This may be more easily effected in new countries, by only allowing town allotments to be proclaimed after the careful selection of healthful sites situated in localities where a good water supply and healthful drainage can be secured. Good ventilation, at the same time, can only be secured by a proper system of streets and lanes, and central reserves for parks. By prescribing the breadth of great intersecting broadways for each division; the minimum width of streets and lanes; the minimum area of central parks within each division, and the minimum air-space in dwellings and workshops for each person, the tendency to overcrowding would be minimised, and a healthful circulation in all quarters secured.

No building should be allowed to be erected until plans of the same, completed according to prescribed forms of structure, ventilation, and drainage, were passed and approved by a permanently appointed Board of competent advisers; and the removal of all refuse and filth should be effected entirely by the town authorities by the best methods suited to the particular locality.

Together with these provisions we must also include the influence of man in the prevention and treatment of injury and disease. The selection of healthful sites for hospitals; the proper isolation of cases deemed to be contagious or infectious; and the proper treatment of cases, have also a very important influence upon the death-rate of each locality.

Upon the whole, it has now been made tolerably clear that, while the total death-rate for all ages may be used locally as a fairly reliable index of the health and sanitary condition of the same place from year to year, it has been proved to be a most fallacious index as regards the comparative health and sanitary condition of different localities, owing mainly to the extreme variability in the proportions living in different places under the principal age-groups. The elimination of old ages, as in the proposed *Health Standards* hereafter referred to, afford more reliable indices between different countries. As regards variations from year to year, it is hoped that the observations made may be helpful to others in making proper deductions therefrom.

Comparison showing Twenty of the specific Causes of Death in various Countries, in the order of their fatality.

SPECIFIC CAUSES.

Tasmania, 1885–9.						Victoria, 1888.	
Cause of Death.	Deaths per 100,000 Persons living.					Cause of Death.	Deaths per 100,000 Persons living.
	1889.	1888.	1887.	1886.	1885.		
1. *Old Age*	192	215	239	212	238	Phthisis	144
2. Atrophy and Debility	130	105	106	85	94	Atrophy and Debility	112
3. Heart Disease	95	122	96	105	105	Diarrhœa	77
4. Phthisis	81	80	110	105	107	Pneumonia	65
5. Convulsions	79	73	72	91	109	Bronchitis	64
6. Typhoid (Enteric Fever) &c.*	76	55	80	35	23	*Old Age*	62
7. Diarrhœa	67	65	88	65	76	Stomach Disease	55
8. Cancer	47	...	48	42	45	Typhoid (Enteric Fever, &c.)	51
9. Bronchitis	45	60	42	76	72	Cancer	49
10. Pneumonia	36	56	58	55	47	Premature Birth	44
11. Liver Disease	30	...	19	20	14	Liver Disease	41
12. Diphtheria	29	30	25	9	17	Fractures, Contusions, &c.	38
13. Apoplexy	26	31	36	41	41	Convulsions	35
14. Premature Birth	25	15	25	27	19	Apoplexy	34
15. Dentition	18	18	10	12	26	Enteritis	28
16. Drowning (accidental)	21	24	21	22	19	Drowning (accidental)	19
17. Paralysis	17	32	27	27	40	Bright's Disease	19
18. Fractures, Contusions	15	21	23	13	17	Tubercular Meningitis	17
19. Dysentery	12	...	10	11	7	Congestion of Lungs	16
20. Dropsy	10	2	23	24	22	Whooping Cough	2

New South Wales, 1888.		England, 1888.	
Cause of Death.	Deaths per 100,000 persons living.	Cause of Death.	Deaths per 100,000 persons living.
1. Phthisis	98	Bronchitis	200
2. *Old Age*	67	Heart Disease, &c.	167
3. Pneumonia	64	Phthisis	154
4. Diarrhœa	64	Pneumonia	107
5. Convulsions	62	*Old Age*	95
6. Bronchitis	59	Convulsions	72
7. Enteritis	48	Debility, Atrophy, Inanition	64
8. Heart Disease	48	Cancer	61
9. Typhoid (Enteric Fever, &c.)	41	Apoplexy	56
10. Cancer	38	Premature Birth	49
11. Fractures, Contusions, &c.	37	Diarrhœa, Dysentery	45
12. Premature Birth	36	Whooping Cough	43
13. Dentition	23	Measles	34
14. Diphtheria	23	Hemiplegia	31
15. Apoplexy	22	Inflammation of Brain	30
16. Tabes Mesenterica	22	Tabes Mesenterica	24
17. Measles	20	Tubercular Meningitis	24
18. Hemiplegia	16	Bright's Disease	24
19. Tubercular Meningitis	13	Fractures, Contusions, &c.	23
20. Dysentery	10	Scarlet Fever	22

* Epidemic this year.

Effects of Age upon the Death-rate.

Tasmania still preserves its singular characteristic of having *Old Age* in itself the first on the list of specific causes of death. As explained in the Report prefixed to Statistics for 1882, this is the principal cause of our relatively high nominal death-rate as compared with the neighbouring Colonies, where the proportion of persons living over 60 years of age is very much lower. There is no doubt that the high proportion in Tasmania will be greatly reduced in a few years, as the number of a certain age-group, now fast dying off, is altogether abnormal, especially so for a young community.

It will be observed that so far as causation of Death is an index of the health of a community, Tasmania compares most favourably with England and Victoria, which are among the best types of healthy countries in Europe and Australia respectively.

How far can the General Death-rate for all ages be relied upon as a comparative index of the health or sanitary condition of any community?

Indices to the state of health or sanitary condition of a community are of the utmost importance to all, and especially so to those who are responsible for local sanitary provisions; and hence it is often asked, how far is the general death-rate of any year to be relied upon as a test of either the health or sanitary condition of any place or country?

It may be demonstrated that the general death-rate of any one place, though in itself due to a combination of many complex causes, may, nevertheless, be used as a fairly reliable local index to health and sanitary condition, although a most faulty index as regards the comparative health or the sanitary condition of different localities. The dominant influences which determine the total death-rate are these:—

1. The proportions living at various age-groups, especially the old age-group, 60 years and over.
2. Migration as affecting the said proportions.
3. Birth-rate as affecting the death-rate of 0-5 years' age-group.
4. Climate.
5. Seasonal influence.
6. Cosmical or obscure influences varying or intensifying local causes of diseases over wide cycles of years.
7. War, violence, and famine.
8. Density of population as exemplified by town and country dwellings.
9. Sanitary provisions.
10. Local conditions of soil, altitude, &c.

Now, of these important influences, which together combine to make up the total death-rate, the first three, though strongly affecting it, are not in the slightest degree connected with either health or sanitary conditions. It is also obvious, so far as any one locality is concerned, that many of the conditions enumerated are more or less constant; while, as regards different localities, and especially countries widely apart, nearly all the conditions come into play as disturbers, and hence it is that the general death-rate of any one locality may be a

fairly reliable comparative index of the health and sanitary condition from year to year; while, as regards longer periods, or widely separated localities, comparisons by the indication of a general death-rate are often utterly fallacious or misleading.

The following illustrates the disturbing effect of one of the most important influences.

The Disturbing Effect of varying Proportions of Persons living at various Age-groups.

To fully comprehend the effect of disturbance from this source we must know in a general way the widely differing proportions which each age-group of living persons yield to the yearly death-rate. This is best appreciated by dividing the ages into three well-marked groups; the first, 0-5 years, showing the heavy losses at the beginning of life; the second, 5-60 years, or vigorous period, showing the sudden descent to a minimum, covering the period of youth and middle age; the third, 60 years or over, or old-age period, suddenly curving upwards and marking the maximum of loss occasioned by the natural decay and termination of the more vigorous lives.

The tables and diagrams contained in Statistical Report for year 1886 give a vivid picture of the broad proportional agreement that exists in different countries as regards the losses of life at the three great age-groups. For notwithstanding the fluctuations caused in different countries, whether due to climate or peculiarities of local condition, there is a wonderful similarity in the proportions which different countries yield at each respective age-group.

The *first* ranges between 27·65 and 50·60 per 1000 living.
The *second* „ 5·60 „ 12·66 „
The *third* „ 49·18 „ 70·39 „

The mean of each age-group shows the relative proportion still more clearly; thus:—

0–5 years' age group yields 42·15 deaths per 1000 living.
5 and under 60 years „ 7·73 „
60 years and over „ 61·53 „

Thus it appears that there is a very wide difference in the proportion of deaths yielded by each age-group, and hence it is that if there be any wide difference in the proportions of the respective groups living in different places, as in young Colonies, the total death-rate would be so much disturbed thereby, that comparisons, so far as they refer to health or sanitary condition, would be erroneous and misleading. That this is to be expected is made still more apparent by contrasting the percentages of Ages living with the percentages of Deaths per year under corresponding age-groups.

Age Groups.

Age-group.	Persons Living.—Percentage.		Deaths per Year.			
			Rate per 1000 Persons living within same Age limit.		Percentage to Total.	
	Variation.	Mean.	Variation.	Mean.	Variation.	Mean.
1. 0-5 years	13·5 to 17·01	14·63	27·65 to 50·60	42·15	34·92 to 45·65	39·69
2. 5-60 years	77·93 to 83·18	80·62	5·60 to 12·66	7·33	28·34 to 53·79	39·80
3. 60 years and over	1·87 to 8·04	4·75	49·18 to 70·39	61·53	6·38 to 36·74	20·51

A study of the foregoing table reveals that if 1 and 3 groups, together representing 19·38 per cent. of the living population, yield as much as 60·20 percentage of the whole deaths for one year, it follows, if there be any material difference in the respective living groups of different countries, that the total death-rate would show a corresponding difference, even though the proportion of deaths yielded at each age-group were identical in the several countries compared. Thus, though the death-rate of each specific age-group were identical in two countries, still the country having the smaller percentage of old age and children living would show a *lower death-rate*. Nay, more. If the variation be considerable, the country with the *smaller* percentage of extremes of youth and old age living would show a *lower total death-rate*, even where the ratio of deaths at specific ages was much *higher*. Take for example, two towns of 100,000 inhabitants, as in the following illustration :—

Illustration of two Towns, each with 100,000 *Inhabitants, but differently proportioned as regards Age-groups living, although the proportion of Deaths yielded by both are the same in relation to each Age-group.*

	Population. No.	Percentage living at			No. Deaths per Year.				Deaths per 1000 Persons at each Age-group.				
		0-5.	5-60.	60 and over.	0-5.	5-60.	60 and over.	Total.	0-5.	5-60.	60 and over.	Total.	
Town A	100,000	13·50	84·63	1·87	613	474	92	1179	38·00	5·60	49·18	11·79	Difference of 2·82 per 1000
Town B	100,000	17·01	74·95	8·04	646	420	395	1461	38·00	5·60	49·18	14·61	

This is a good illustration of cases where the total death-rate is a faulty comparative index to the state of health or sanitary condition, for the difference 2·82 per 1000 is due entirely to the varying proportion of persons living at each age-group, and not to any difference in the proportion of deaths yielded by them.

Illustration of three Towns, each with 100,000 *Inhabitants, but differing in proportion as regards Age-groups living, and also differing in the proportions of Deaths yielded by each group.*

	Population. No.	Proportion per cent. living at each Age-group.			No. of Deaths per Year.				Deaths per 1000 Persons at each Age-group.			
		0-5.	5-60.	60 and over.	0-5.	5-60.	60 and over.	Total.	0-5.	5-60.	60 and over.	Total.
Town C	100,000	13·50	84·63	1·87	569	654	115	1338	42·15	7·73	61·53	13·38
Town D	100,000	17·01	74·95	8·04	646	420	395	1461	38·00	5·60	49·18	14·61
Town E	100,000	17·01	74·95	8·04	717	579	494	1790	42·15	7·73	61·53	17·90

This comparison again still more forcibly illustrates the faulty indication of the total death-rate, as regards the comparative state of the health or sanitary conditions of the three towns taken; for it so happens that D, which has a much larger yield of deaths relative to each age-group, is nevertheless made to appear 1·23 per 1000 persons *higher* than C by the total death-rate; whereas the true relation of C, in relation to health and sanitary condition, as compared with D, can only be ascertained by computing C's death-rate at each age-group in connection with the same living age-group proportions, as in D. By this means alone would a true comparison be effected between them as regards health and sanitary condition, and instead of C being 13·38 per 1000 persons, and lower than D by 1·23 per 1000, it is, as regards health in relation to D, really equivalent to 17·90 per 1000 persons living, or equal to 3·29 per cent. per 1000 *above the index of* D.

Since the *Health Standard* was proposed by the writer, in 1882, another method for effecting comparisons was introduced by Mr. Hayter (Year Book for 1885, pp. 264-268), and termed by him *The Absolute Death-rate.* This method ignores actual proportions living at each age altogether, and artificially substitutes uniformity of proportion, by recognising fifteen age-groups of equal value, say 1000 for each); but, as it makes no allowance for the element of old age, this health element neutralises the true approximate indication of proportion from preventible causes, and renders it useless as a comparative standard of health.

In a paper communicated by the author to the Royal Society of Tasmania on April 19th, 1887, the merits and defects were shown of the several methods usually employed indifferently to measure *natural increase or decrease of population*, or as an index to the *comparative health* of different places or periods. It was also shown that the ordinary reference of the proportion of total deaths to the number of persons living is not *in itself* in any sense *a comparative health standard*, as popularly understood; and that all comparative methods which ignore proportional age-groups living, and make no allowance for the *value* of greater longevity, are utterly misleading in most cases, when unguardedly used as comparative standards of health. A simple method was then also suggested for correcting comparative tables, so far as the living age-groups are concerned, with a view of bringing a common fixed standard of age-groups into a closer approximation with the average actual proportions living in different countries, and so avoiding one of the chief defects of Mr. Hayter's original *Absolute Death-rate* standard. The methods referred to, termed the "Relative" or "Comparative Death-rate" for all ages, divided the ages living into the three principal groups 0-5 : 5-60 : 60 and over; and as it is ascertained, by reference to the average numbers living in different countries, that these groups bear the proportion to each other of 3, 16, 1, respectively, these simple numbers and groups were selected as the best and most convenient for minimising the error usually contained in aggregates obtained from widely differing proportional numbers of persons living at different ages in different countries. The method for effecting this correction was illustrated as follows:—

Let A = Proportion of ages living 0-5 years = 3*
B = " " " 5-60 " = 16*
C = " " " 60 and over = 1*
R^a = Death-rate actually yielded by ages living 0-5
R^b = " " " " " 5-60
R^c = " " " " " 60 and over
D = Relative or Comparative Death-rate for all ages :

$$\text{Then, } \frac{AR^a + BR^b + CR^c}{A + B + C} = D$$

The proportions 3, 16, 1, though more closely approximating the average of different countries as regards the age-groups named, would be more exact, so far as the population of England is concerned, if the age-groups were modified slightly ; thus :—

Ages 0-5	= 3
" 5-65	= 16
" 65 over	= 1
All ages.....	= 20

Total Death-rate disregards Longevity.

The fundamental objection to all *Total Death-rate indices*, when used as Health Standards, is,—that a life terminating *one hour after birth* is reckoned to be of equal value to a life terminating *one hundred years* after birth ; and that the death of an *octogenarian* from *senile decay* adds as much to the *rate* as the death of youth or middle age from a *preventible cause* such as *small-pox or typhoid*. To find a true *health standard* under such conditions would be as deceptive and hazardous as to find the truth of a complex problem composed of elements whose values, whether *plus or minus*, could not be ascertained. Reasoning upon such matters is often obscured by many minor considerations ; and the latter too often are erected into a position of importance to which they are not by right entitled. Some trivial influences are too often magnified, because the labour and ingenuity in tracing them are sometimes very great. It is well to go back to first principles occasionally ; and endeavour to obtain answers to the following queries :—

Is the relative smallness of the proportions which the numbers of deaths may bear to the living, within any one of a serial order of age-groups—or taken as a whole—always to be taken as a perfectly reliable index (*a*) of the superior health conditions of the particular place? (*b*) of the direct beneficial influence of the particular year? or (*c*) of the *comparative health* of the different age-groups within the same environment? If an answer in the affirmative cannot reasonably be given to each query, then it is clear that standards based upon this method, without qualification, cannot justly be acknowledged as *Health Standards*, however useful they may be for other purposes.

Broadly speaking, the relative smallness of the proportion may be accepted as true as regards *a* and *b* ; but, even here, the extraordinary

* These figures are the lowest simple relative approximates to the mean proportions living within the respective age-groups.

experience of the city of London (*see* following table) introduces doubt whether the very low proportion between the ages 10-30* may not be due to the continuous migratory circulation between the country and the city: the latter benefited by the introduction of fresh healthy country-born youths freed from the influence of birth-rate; the former injured in comparison by exchanging its healthy youth for those returning broken in health by the unhealthy employment and the injurious environment of the city.

Death-rates at Twelve Groups of Ages.

		Deaths per 1000 living at each Age-group.												Relative Health Standard.	
														Mean Age at Death.	
		0 - 5.	5 - 10.	10 - 15.	15 - 20.	20 - 25.	25 - 35.	35 - 45.	45 - 55.	55 - 65.	65 - 75.	75 - 85.	85 and over.	All Ages.	All Ages under 65 corrected for disproportion of Age-groups.	65 Years and over.
Tasmania .. Mean	1883-7	34·8	3·5	2·4	4·2	5·7	7·6	8·6	13·0	25·7	63·3	143·9	286·2	15·7	11·83	76·2
England .... „	1886	55·6	4·7	3·0	4·4	5·5	7·4	11·1	17·1	30·8	68·1	143·4	316·3	19·3	14·55	75·9
London..... „	1886	63·7	4·7	2·7*	3·5*	4·5*	7·2*	12·6	20·2	35·3	74·9	151·8	310·0	19·9	18·10	75·3
Glasgow .... „	1885	86·2	10·3	6·5	8·0	..	..	..	..	..	..	..	..	25·9	25·31	73·9
Hobart District „	1886	53·0	4·4	2·5	5·4	8·4	12·5	11·7	15·9	30·1	102·9	174·2	655·2	23·5	16·87	76·0

In the foregoing table we have the more elaborate death-rate for all ages, and for twelve subordinate age-groups in serial order. To the right of it is added the "Relative Health Standard" for all ages under 65 years corrected for disproportion of numbers living under different age-groups 0-5 and 5-65. A study of the two methods side by side brings out curious contrasts. For example, if we take in ascending order the indices of the ordinary "Death-rate" and "The Relative Health Standard," the several places are wonderfully transposed or altered in relative value; thus:—

By ordinary "Death-rate."		By "Relative Health Standard."	
1. Tasmania	15·7	1. Tasmania	11·83
2. England	19·3	2. England	14·55
3. London	19·9	3. Hobart District	16·87
4. Hobart District	23·5	4. London	18·10
5. Glasgow	25·9	5. Glasgow	25·31

Who would have imagined, in looking over the deceptively elaborate "Ordinary Death-rates," that so much difference would be shown between the average of England and the City of London in respect of comparative health, as represented by the more reliable and simple "Health Standard!" And who could ascertain from the former deceptive indices that, in a "health" point of view, the Hobart District was much superior to the much vaunted City of London!

Some have objected to the "Health Standard" because it does not profess to show the proportion which the number of deaths bear to the living for age-groups over 60 or 65 years. But a little reflection will show that such comparative proportions in the old age-groups *are obviously false* if the larger proportions are interpreted adversely as regards relative health, either with respect to other places or other age-groups where the proportions appear to be *smaller*. The only true test of perfect health afforded by death, whether of the life or its environment, is extreme length of years, and not the proportion which the dying bears to the living; and this, fortunately, is not a mere matter of opinion, for it can be demonstrated in a very simple manner, as shown hereafter.

Let us suppose that there are now living in Tasmania five persons over the age of ninety-nine years, as follows:—

Age	90.	91.	92.	93.	94.	95.	96.	97.	98.	99.	100.	101.	102.	103.	104.
Year 1888.	10	4	—	6	—	—	—	—	—	5	—	—	—	—	—

Now, suppose that during the next five years one of the five living under age (99) in 1888 dies at the close of each succeeding year, it would then be seen that as the number of the survivals diminished, the proportion of the dead to the living age-group 100 *and over* necessarily increases geometrically, while the average age at death also increases, but more slowly and in numerical order; thus:—

Age middle of Year.	Persons living, 100 and over.						No. of Deaths, 100 and over.						Deaths per 1000 living.	Average Age at Death.
	100.	101.	102.	103.	104.	Total.	100.	101.	102.	103.	104.	Total.		
1889	5	—	—	—	—	5	1	—	—	—	—	1	200	100
1890	—	4	—	—	—	4	—	1	—	—	—	1	250	101
1891	—	—	3	—	—	3	—	—	1	—	—	1	333	102
1892	—	—	—	2	—	2	—	—	—	1	—	1	500	103
1893	—	—	—	—	1	1	—	—	—	—	1	1	1000	104

Thus, it is clearly demonstrated that within five years the mere dropping out of five lives within the 100 and over age-group gradually raised the proportion of the dead to the living from 200 to 1000 per thousand necessarily; and at the latter ages, instead of a low proportion being the best index to the best health and greatest longevity, it is the reverse; *for* 1000 *per thousand* can alone be obtained by that life which in the middle of the last year *is the oldest living survival.*

Other Fallacies.

There are other fallacies connected with the actual proportions between the living and dying at particular age-groups; especially so when the latter—no doubt with the desire for greater precision—are broken up, as shown, into a great number of small divisions.

It is true the actual numbers of the dead under each subdivision can be ascertained in each year, but the actual *number of persons living* under similar age-groups in any place can only be ascertained with anything approaching similar precision in each *Census* year. The percentage proportions of persons living under the smaller age-groups vary considerably in young countries within a very few years; and although the extent of variation is limited, the estimates of living population are invariably based upon the assumption that the proportions of subdivision on estimated total population of the current year are identical with the proportions obtaining in the year when the last Census was taken. It may happen, therefore, that the minor variations observed between one year or one country and another (in some of the smaller age-group divisions especially) are as frequently due to erroneous estimates of the population living in that group in the particular year, as to any change in the local influences affecting health. Besides, the stability of any general law, as in expectation of life, depends often upon the breadth of the numbers taken into the reckoning. Now, as the minor or quinquennial groups living dwindle away gradually from the relative proportions of about

13·5 for the 0-5 group, to about 0·005 in the group 95 and upwards, it is apparent that in populous countries, in the groups over 55, and in thinly populated colonies, in the earlier, the persons living under the minor groups of ages are not numerous enough to give satisfactory indications. The same objections do not appear so formidable when the broad divisions of Childhood, Youth, Middle Age, Old Age are taken into consideration—say, 0-5, 5-65, and 65 and over—which constantly present the proportions of 3, 16, 1, nearly, in a division of 20 taken as total. These are the principal reasons why the method of the "Health Standard" originally introduced by the writer in 1882 may be considered as at once the *truest and most convenient single index* of the health of any community. In the communication to the Royal Society of Tasmania referred to, there is also introduced a method for improving the Health Standard by adopting a uniform standard approximating to the average of normal living populations, and so getting rid of the error caused by serious disproportion in the corresponding age-groups of the places compared. This was (see page xxi., Statistics of Tasmania for 1886) by combining age-groups 0-5 and 5-65, as in the improved "Comparative Death-rate for all Ages," and eliminating the disturbing old-age group $\frac{CR^c}{C}$, whose proportions of dying to the living are antagonistic to the earlier groups from a health point of view, as already demonstrated.

This improved Health Standard is fully explained in Statistical Report, 1886, and is termed *The Relative Health Standard*, in contradistinction to the old (actual) Health Standard for ages under 60, which makes no allowance for local differences in the age proportions of the living 0-5, 5-60.

The formula for computing the *Relative Health Standard* was given also in p. xxii. in the same report, together with the other methods; and, as already explained, only differs from the formula of the Comparative Death-rate for all ages by the elimination of $\frac{CR^c}{C}$.

Thus: $\frac{AR^a + BR^b}{A + B} = H$, or Relative Health Standard.

Or, $\frac{(\text{Death-rate 0-5 group} \times 3) + (\text{Death-rate 5-60 group} \times 16)}{3 + 16, \text{ or } 19} = H.$

The especial feature of the two new methods given—viz., *the Comparative Death-rate* for all ages, and the *Relative Health Standard* for ages under 60—is, that *they both make allowance for the varying conditions in regard to age* which may exist between different populations.

The following table shows how closely Mr. Hayter's more recently adopted *Adjusted Death-rate* follows the principle of the *Relative Health Standard* as used in this work in regard to the fundamental principles—(1) the exclusion of old ages; and (2) the correction for the possible disproportion of living age-groups in different places by means of a common fixed standard approximately to the average mean proportions observed in various countries:—

Fixed Standard of Model Population for correcting the possible Disproportion existing in important living Age-groups between different Places compared.

Age-group.	The Method of the Author's Relative Health Standard.*			The Method of Mr. Hayter's Adjusted Death-rate.		
	Relative Proportion of the Age-group in a Model Population.	Death-rate per 1000, Tasmania, 1887.	Relative Number of Deaths in each group in a Model Population of 20,000.		Death-rate per 1000, Tasmania, 1887.	Relative Number of Deaths in each group in a Model Population of 10,000.
0 – 5 = A	3 = 1350	33·43 = R^a	100·29	1350 = 3	33·43	45·131
5 – 10				1200	3·43	4·116
10 – 15				1075	2·30	2·469
15 – 20				1000	4·39	4·400
20 – 25				900 = 8200	6·46	5·814
25 – 35				1475 or	11·09	16·358
35 – 45				1125 16	9·71	10·932
45 – 55				825	10·89	8·984
55 – 65 = B	16 = 8200	7·82 = R^b	125·12	600	22·73	16·638
All Ages under 65	19 = 9550	..	226·41 ÷ 19 = Average per 1000, 11·96 = H†	9550 = 19	..	114·842 ÷ 9550 = Average per 1000, 12·02‡
65 – 75	..	..	..	325	61·96	20·137
All Ages under 75	..	..	..	9875 = 1		134·979 = Average per 1000, 13·63§
75 – 85	1 = 450			110		
85 and over = C				15		
	20 = 10,000			10,000 = 20		

* Age-group 0-60 modified to 0-65 to effect comparison more exactly.
† 11·96 H = Relative Health Standard result for all Ages under 65.
‡ 12·02 = Adjusted Death-rate result „ „ „ 65.
§ 13·63 = „ „ „ „ „ „ 75.

It will be seen from the comparison of the two methods that the differences between them involve no difference in principle. The Adjusted Death-rate simply follows the method of the Relative Health Standard. The only modifications introduced are the multiplication of age-groups 5-65, and the invasion of the old-age group, including all ages under 75. Substantial reasons have already been given unfavourable to proportions drawn from the smaller age-group subdivisions, and especially as regards the fallacy of all proportions between living and dying in the old-age group as regards *Comparative Health*. In addition, the Adjusted Death-rate is inconvenient, and involves at least five times the labour of computation when compared with the handy Health Standard; and as necessary data for the age-group divisions of the former can seldom be obtained in the Vital Statistics of many countries, it is far less practicable. This is borne out by the fact that in Mr. Hayter's Year Books for 1886-7, 1887-8, he still uses the defective ordinary death-rate in comparisons between the several Colonies and their chief divisions, cities, and towns. Rightly or wrongly the popular notion is that the ordinary Death-rate is a fair index of comparative health, and is mainly judged in this way, even by the members of the medical profession, although its indications are often worse than useless.

Comparative Health of Cities.

The unscientific method of measuring the comparative health of cities by the ordinary "Death-rate," like many other popular fallacies, is far too deeply rooted to be easily destroyed. But although ordinary persons may be excused for confounding a "Death-rate" with a "Health Standard," it is a matter for surprise that those who contribute articles on Public Health to *The Lancet* and other first-class publications should still display so much ignorance on this very important subject. Much harm is done also in popular statistical works in making a simple parade of unqualified "Death-rate" figures relating to various cities, inasmuch as the higher rates are invariably interpreted as the more unhealthy. It may be safely affirmed that the comparative health of *cities* cannot be closely approximated by means of the "total Death-rate." Nor can any reference be relied upon if the following safeguards or particulars are imperfect or lacking in respect of each city compared:—

1. Record of Deaths under various ages.
2. Estimated Population of the current year, computed on the basis of proportions at last Census; and in case of extensive local country or town migration between Census years, the average birth-rate (say, mean of last Census year and the two years following) should be computed in relation to the actual known births of the year, as a test of accuracy.

For better illustration of these remarks, let us take Mr. Hayter's usual reference:—

DEATHS in Australasian Capital Cities, 1889.

Order.	Capital Cities. *	Mean Estimated Population, 1889.	Deaths.			
			Total Number.		Number per 1000 of the Population.	
			1888.	1889.	1888.	1889.
1	Melbourne	445,220	8606	10,412	20·51	23·39
2	Brisbane	73,649	1459	1572	17·00	21·34
3	Sydney	374,207	6258	6338	17·49	16·94
4	Adelaide	120,353	1994	1856	17·28	15·42
5	Hobart	35,672	715	699	20·77	19·95

*Including suburbs.

Of course, it is natural for ordinary persons to conclude that this is a record or index of the comparative health of these cities: and if it be not so they may well exclaim, for what other purpose are they shown? For they are two imperfect to be used for actuarial or other purposes.

That they are utterly fallacious as indicies of comparative health, is demonstrated in the following table computed on the basis of the Relative Health Standard, the only measure for ascertaining comparative health with any degree of accuracy:—

RELATIVE Health Standard—various Cities.

	Deaths under 65 years per 1000 living, corrected for age disproportion.				
	1885.	1886.	1887.	1888.	1889.
1. Hobart City Suburbs	...	15·79	17·99	16·25	15·49
2. Sydney Suburbs	...	17·35	16·33	...	16·57
3. London	...	18·10	18·00	...	...
4. Adelaide.....	...	21·44	20·48	...	...
5. Brisbane	...	21·50	19·65	...	21·01
6. Melbourne Suburbs...	...	19·40	21·00	...	23·51
7. Glasgow	25·31	...	...	...	...
8. Dublin City (North & South)	...	...	36·04	...	...

If there be any lingering doubt as regards the truth of this relative order from a health point of view, which places Hobart in a far superior position to the rest—and not the reverse, as shown in the ordinary death-rate table, it ought to be settled by reference to the associated columns—deaths 0-5 and 5-65 taken by themselves; deaths under 1 year per 1000 births; and average mean age of all persons dying 65 years and over. A careful analysis of the following Comparative Table unmistakably demonstrates that these collateral tests combine in showing that Hobart (as might be anticipated, from its smaller size and from its naturally favoured position) stands in the most favourable position in every respect. That is; (1) life is more greatly prolonged; (2)

its infantile mortality is the lowest; (3) there are fewer deaths under 65 to the population living under the same age limit than in any other city compared; (4) and lastly, there is a larger proportion of the population living to extreme old age than elsewhere, and that even the larger numbers, 65 and over, show a higher mean age at death (76·1—76·5) than in any of the rest.

It has already been shown that in the old-age group 65 and over the highest relative proportions between dying and living (viz., 200 to 1000 per 1000) can only be attained by *those who live longest.* It is significant that Hobart Suburbs, 1886-7, should illustrate these conclusions so remarkably. Its "Ordinary Death-rate"—owing to the large number of persons living within this division (12·59 per cent. of total population), 65 years and over, is larger than any other city or division of city shown, (viz., 33·91–34·31), and so also is the proportion of deaths to persons living, (169·12). Nevertheless, it is clear that no other city or division of city contrasted can vie with it in a health point of view—in the smaller proportion of deaths in the ages 0–65, especially in infants under one year and all children under 5 years; and in the mean age at death of the very unusual proportion of persons who have prolonged their lives beyond the limit of 65 years.

The "Ordinary Death-rate," which ignores longevity and the causes of death entirely, and merely indicates the proportion existing between the numbers living and dying—conceals all important truths relating to health; and, as regards cities at least, its results are utterly misleading and harmful.

To include deaths over 65 years in any "Health Standard," based upon the proportions between the living and dying, may be regarded as a blunder in reasoning; and the exclusion of this group in the Relative Health Standard is its greatest merit.

Population and Deaths in Town and Country Districts, Tasmania (Year 1889), under Age-Groups.

NUMERICAL.

	Estimated Mean Population.				Deaths.				
	0-5.	5-65.	65 & over.	Total.	0-5.	5-65.	65 & over.	Total.	Under 1 year.
Hobart—City	3450	22,481	1230	27,161	168	213	97	478	127
Suburbs	895	5996	993	7884	36	60	125	221	31
Total District	4345	28,477	2223	35,045	204	273	222	699	158
Launceston—City	2058	13,491	853	16,402	129	187	104	420	108
Suburbs	723	4209	228	5160	23	35	18	76	17
Total District	2781	17,700	1081	21,562	152	222	122	496	125
Country Districts	13,748	74,513	3947	92,208	310	396	197	903	223
Total Tasmania	20,874	120,690	7251	148,815	666	891	541	2098	506

PERCENTAL.

Hobart—City	12·70	82·77	4·53	100·00	35·15	44·56	20·29	100·00	25·10
Suburbs	11·35	76·05	12·60	100·00	16·29	27·15	56·56	100·00	6·13
Total District	12·40	81·24	6·36	100·00	29·18	39·06	31·76	100·00	31·23

Launceston—City	12·55	82·25	5·20	100·00	30·71	44·53	24·76	100·00	21·34
Suburbs	14·01	81·58	4·41	100·00	30·26	46·05	23·69	100·00	3·36
Total District	12·90	82·09	5·01	100·00	30·64	44·76	24·60	100·00	24·70
Country Districts	14·91	80·81	4·28	100·00	34·33	43·86	21·81	100·00	44·07
TOTAL TASMANIA	14·03	81·10	4·87	100·00	31·74	42·48	25·78	100·00	100·00

DEATH-RATE.

	DEATHS PER 1000 PERSONS LIVING.				HEALTH STANDARDS.		
	0-5.	5-65.	65 & over.	TOTAL.	All Ages under 65 per 1000 living.†	Infant mortality per 1000 Births.	Mean Age at Death of Group 65 and over.
Hobart—City	48·70	9·47	78·86	17·60	15·66	...	...
Suburbs	40·22	10·01	125·88	28·03	14·78	...	...
District	46·95	9·59	99·87	19·95	15·49	150	75·52
Launceston—City	62·68	13·86	121·92	25·61	21·57	...	...
Suburbs	31·81	8·32	78·95	14·73	12·03	...	...
District	54·66	12·54	112·86	23·00	19·19	173	75·86
Country Districts	22·55	5·31	49·91	9·79	8·03	75	77·31
ALL TASMANIA	31·91	7·38	74·61	14·10	11·25	106	76·25

* Including undefined. † Corrected for disproportion of Age-groups. (See method explained, p. xxv., Statistics, year 1887.)

The following table is prepared upon this method, to show the comparative healthiness of different countries :—

DEATHS during different periods in Tasmania at various Age-groups, computed independently in relation to Persons living at corresponding Age-groups, and compared with different Countries.

	Deaths per 1000 Persons.				
				Ages.	
	0 - 5. A.	5 - 65. B	65 & over. C	All Ages. Normal Standard.	Under 65 years. Corrected for Age-disproportion. Relative Health Standard.
New Zealand, 1888	21·19	6·33	72·88	9·87	8·68
Ditto, 1889	20·79	5·88	66·22	9·40	8·23
Tasmania, average of 1882 to 1886	34·80	7·52	89·70	15·72	11·83
Ditto, 1886	33·50	6·77	90·81	14·58	10·93
Ditto, 1887	33·43	7·82	91·52	15·45	11·96
Ditto, 1888	30·47	7·37	79·11	14·11	11·01
Ditto, 1889	31·91	7·38	74·61	14·10	11·25
South Australia, 1889	28·61	5·74	82·93	11·10	9·35
New South Wales, 1886	45·33	7·62	75·69	14·89	13·55
Ditto, 1887	37·37	6·94	73·45	13·15	11·74
Ditto, 1889	41·88	6·73	72·23	13·43	12·28
Victoria, 1887	43·19	8·78	107·59	15·70	14·22
Ditto, 1888	41·63	8·42	94·65	15·34	13·66
Ditto, 1889	56·42	9·39	84·54	17·56	16·82
Queensland, 1888	41·61	8·77	56·45	14·66	13·96
Ditto, 1889	45·98	9·01	55·14	15·44	14·85
England, 1887	53·55	8·95	93·84	18·79	15·99
Ditto, 1888	48·30	8·71	90·26	17·79	14·96

These figures clearly establish the superior health conditions of New Zealand and Tasmania as compared with the other countries with which they are contrasted; and the analyses also show that their health condition would not be correctly indicated by the total death-rate.

Comparative Healthiness of various Cities, as indicated by Death-rates.

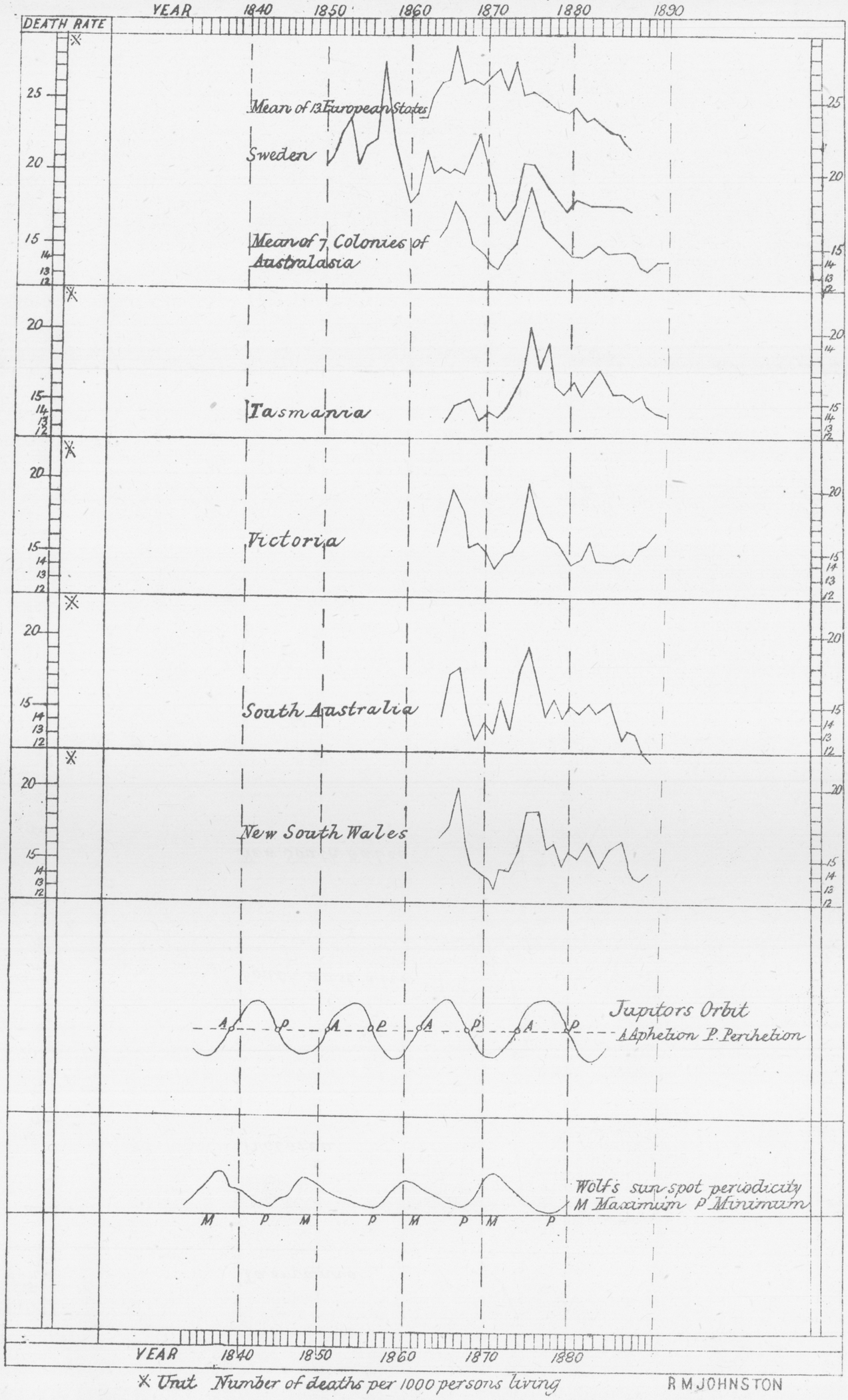
		Death-rates per 1000 living.					Mean Age of Deaths 65 and over.	Deaths under 1 Year per 1000 Births.
		Age-groups.				Relative Health Standard.		
		0 - 5.	5 - 65.	65 and over.	All Ages.	All Ages under 65 corrected for Age-disproportion.		
	Average.	A	B	C	D	E	F	G
Hobart City Suburbs	1882–6	50·73	9·65	134·49	22·74	16·66		
Hobart City	1886	52·18	8·68	110·22	18·80	15·34	76·5	135
Ditto Suburbs	,,	39·90	12·29	159·21	33·91	16·65		
Ditto City and Suburbs	,,	49·65	9·44	132·23	22·21	15·79		
Hobart City	1887	53·89	12·12	89·98	20·96	18·71		
Ditto Suburbs	,,	35·00	11·85	169·12	34·31	14·27	76·1	151
Ditto City and Suburbs	,,	49·30	12·13	120·76	23·96	17·99		
Hobart City	1888	52·00	10·59	85·50	19·25	17·13	75·00	
Ditto Suburbs	,,	31·10	9·46	130·86	27·21	12·87	77·22	142
Ditto City and Suburbs	,,	47·70	10·35	105·75	21·04	16·25	76·23	
Hobart City	1889	48·70	9·47	78·86	17·60	15·66		
Ditto Suburbs	,,	40·22	10·01	125·88	28·03	14·78	75·52	150
Ditto City and Suburbs	,,	46·95	9·59	99·87	19·95	15·49		
Melbourne and Suburbs	1887	70·91	11·64	106·27	21·25	21·00	...	175
Ditto	1889	83·49	12·27	107·90	23·39	23·52	...	194
Adelaide	1888	41·40	12·00	133·50	19·04	16·64	...	203
Ditto	1889	40·81	9·90	184·47	18·63	16·05	...	160
Sydney and Suburbs	1887	57·06	8·69	29·75	16·19	16·33	...	141
Ditto	1889	62·09	8·03	61·21	16·94	16·57	...	172
Brisbane	1886	79·56	10·55	79·83	19·70	21·50	72·0	157
Ditto	1887	73·84	9·49	54·21	18·91	19·65	74·2	166
London	1886	63·7	9·55	91·98	19·90	18·10	75·37	159
Ditto	1887	64·2	9·35	85·34	19·50	18·00	...	158
Glasgow	1885	86·20	13·90	77·71	25·90	25·31	73·99	156
Dublin	1886	70·02	16·03	79·27	25·95	24·55	75·28	156
Ditto (North and South)	1887	90·43	18·75	151·38	32·97	30·04	...	190

PERCENTAGE of Deaths occurring at specific Ages during the Years 1888 and 1889.

Age.	Average of Decade 1880-9.	1888.	1889.	Age.	Average of Decade 1880-9.	1888.	1889.
Under 1...	23·53	22·59	24·12	Under 65...	5·86	5·65	4·33
„ 2...	4·31	3·64	3·82	„ 70...	6·68	6·33	6·43
„ 3...	1·84	1·57	1·47	„ 75...	14·10	7·22	6·77
„ 4...	1·21	1·28	1·29	„ 80...		6·19	5·39
„ 5...	9·96	1·18	1·05	„ 85...	6·56	4·12	3·82
„ 10...	3·01	3·73	4·86	„ 90...		2·26	2·38
„ 15...	5·02	1·92	2·71	„ 95...	0·75	0·69	0·61
„ 20...		3·54	3·40	„ 100...		0·34	0·20
„ 25...	7·58	3·88	4·05	100 and over	0·07	0·15	0·09
„ 30...		4·37	4·29	Undefined ...	0·14	0·10	0·09
„ 35...	5·29	3·44	3·62				
„ 40...		2·21	2·72	Under 5.....	31·85	30·26	31·75
„ 45...	5·24	3·04	2·24	5 & under 65..	39·84	42·34	42·47
„ 50...		2·45	3·33	65 & upwards	28·16	27·30	25·69
„ 55...	7·84	4·03	3·15	Undefined ...	0·14	0·10	0·09
„ 60...		4·08	3·77				

The analysis of this table shows that the percentage of deaths in 1888 and 1889 under five years and above 65 years is slightly below the average, the percentage of deaths between 20 and 45 is much above it. This latter result is partly due to the severity of Typhoid, in respect of all ages between 20 and 45, during 1888 and 1889, and partly to the gradual extinction of the abnormal number of persons living over 65 years of age.

DEATH RATE PERIODICITY OF VARIOUS COUNTRIES COMPARED



※ Unit Number of deaths per 1000 persons living

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ness of various Cities, as in

Comparative Annual Death-rate of various Countries.

	Europe.		Australasia.							Mean of principal States of Europe.	Mean of the Seven Colonies of Australasia
	England.	Sweden.	Victoria.	New South Wales.	South Australia.	Queens-land.	Western Australia.	New Zealand.	Tasmania.		
1839	21·8	...	...	...	...	...	...	...	...	...	...
1843	21·2	...	...	...	...	...	...	...	...	...	...
1845	20·9	...	...	...	...	...	...	...	...	...	...
1848	24·7	...	...	...	...	...	...	...	...	...	...
1851	22·0	20·8	...	...	...	...	...	...	...	...	...
1853	22·9	23·7	...	...	...	...	...	...	...	...	...
1856	20·5	21·8	...	...	...	...	...	...	17·80	...	...
1857	21·8	23·7	...	...	...	...	...	...	17·10	...	...
1860	21·2	17·6	...	...	...	...	...	...	19·92	...	...
1861	21·6	18·5	...	...	...	...	...	...	16·36	23·4	...
1862	21·4	21·4	...	...	...	...	...	...	15·01	23·1	...
1863	23·0	19·3	...	...	...	...	...	...	15·49	24·4	...
1864	23·7	20·2	...	...	...	...	...	...	15·34	25·5	...
1865	23·2	19·4	16·97	16·41	14·30	21·42	...	15·13	13·40	26·0	16·3
1866	23·4	20·0	19·37	17·47	17·20	25·67	...	12·86	14·19	28·8 *	17·7 *
1867	21·7	19·6	18·06	19·64	17·48	17·80	...	12·78	14·44	25·5	16·7
1868	21·8	21·0	15·00	15·83	14·41	17·36	...	11·94	14·75	25·9	14·9
1869	22·3	22·3	15·47	14·05	12·37	16·20	...	11·73	13·24	25·4 †	13·8
1870	22·9	19·8	14·61	13·27	13·94	14·59	...	11·13	14·08	26·1	13·6
1871	22·6	17·2	13·46	12·54	12·87	14·83	...	10·13	13·46	27·0	12·9 †
1872	21·3	16·3	14·38	14·11	15·33	14·97	14·02	11·68	13·83	2[illegible]·4	14·0
1873	21·0	17·2	15·02	13·84	13·48	16·06	16·24	12·67	14·60	2[illegible]·4 *	14·6
1874	22·2	20·3	15·72	15·12	17·05	17·98	18·74	13·05	16·22	25·0	16·3
1875	22·7	20·2	19·42	18·09	19·45	23·80	17·88	15·92	20·01	25·4	19·2 *
1876	20·9	19·5	17·02	18·11	16·28	18·82	14·18	12·66	16·87	24·3	16·2
1877	20·3	18·5	15·80	15·28	13·99	17·29	15·70	11·47	19·19	23·9	15·5
1878	21·6	18·0	15·46	15·88	15·44	20·41	14·07	11·01	15·67	24·2	15·4
1879	20·7	16·9	14·53	14·29	14·09	14·97	14·46	12·46	15·18	23·7	14·3
1880	20·6	18·1	13·70	15·57	14·85	13·59	13·24	11·46	16·12	24·29	14·0 †
1881	18·9	17·7	14·16	15·12	14·49	15·02	13·80	11·13	14·77	23·30	14·0 †
1882	19·6	17·4	15·11	16·03	15·15	17·99	14·16	11·19	15·79	23·51	15·2
1883	19·5	17·3	14·18	14·57	14·86	18·82	17·93	11·45	17·06	22·93	14·45
1884	19·6	17·5	14·27	15·88	15·24	22·97	21·87	10·39	15·50	22·02	15·09
1885	19·0	17·8	14·73	16·42	12·48	19·58	17·61	10·76	15·40	21·31 †	14·83
1886	19·3	16·6	15·14	14·89	13·63	16·76	21·67	10·54	14·58	21·75	14·34
1887	18·8	16·1	15·70	13·15	12·77	14·56	16·83	10·29	15·45	...	13·64 †
1888	17·8	...	15·34	13·54	11·96	14·66	16·00	9·43	14·11	...	13·41
1889	...	...	...	...	10·97	15·44	13·98	9·40	14·10	...	...

* Maximum years. † Minimum years.

Typhoid Epidemic.

During the year 1887 the Island was visited by an extraordinary and violent epidemic of Typhoid or Enteric Fever. Although affecting urban and country districts, it was in the former alone that this malign disease raged with intensity. No less than 112 valuable lives were lost to the Colony, mostly in the prime of life, and the greater part of these deaths (70, or 62·5 per cent.) occurred within the Registration District of Hobart.

Hitherto Hobart was the more favoured locality as regards immmunity from this disease, and it is remarkable, therefore, that the epidemic of 1887 should there rage with greatest intensity. It will be seen, from the following table, that Typhoid in some form has never been absent from the Colony; and whatever may be the immediate combination of conditions favouring its development, and however certain it may be that neglect of hygiene forms a most important factor, it is certain that there are other obscure conditions, beyond human control, which, at stated times, produce greater activity or virulence in the specific disease germs.

Deaths from Typhoid, Measles, and Scarlatina, in Tasmania.

Year.	Hobart District.			Launceston District.			Country Districts.			All Tasmania.		
	Typhoid,&c.	Measles.	Scarlatina.	Typhoid,&c.	Measles.	Scarlatina.	Typhoid,&c.	Measles.	Scarlatina.	Typhoid,&c.	Measles.	Scarlatina.
1838	1											
1839	9											
1840	18											
1841	2											
1842	21	...	22									
1843	20	...	36									
1844	12	...	1									
1845	4											
1846	6											
1847	9											
1848	13											
1849	8											
1850	14	2	1									
1851	12	1	6									
1852	18	...	28									
1853	12	1	256									
1854	16	79	10									
1855	21	4	2									
1856	13											
1857	6	...	1									
1858	8	...	9									
1859	12	...	3									
1860	9	...	1									
1861	18	22										
1862	12	...	2									
1863	17	...	1									
1864	4	...	6									
1865	1	...	1									
1866	5	...	1									
1867	5	11	1									

DEATHS from Typhoid, &c.—*continued.*

Year.	Hobart District.			Launceston District.			Country Districts.			All Tasmania.		
	Typhoid,&c.	Measles.	Scarlatina.	Typhoid,&c.	Measles.	Scarlatina.	Typhoid,&c.	Measles.	Scarlatina.	Typhoid, &c.	Measles.	Scarlatina,
1868.....	4	...	...	...	...	...	...	...	...	32		
1869.....	4	...	...	..	...	...	...	...	...	32	...	3
1870.....	6	...	...	...	...	...	...	...	...	26		
1871.....	...	...	...	..	...	...	...	...	...	8	2	7
1872.....	11	...	...	...	...	...	...	...	...	30	1	3
1873.....	12	...	10	...	...	...	...	...	...	24	...	10
1874.....	11	...	7	...	...	...	...	...	...	44	...	21
1875.....	20	38	8	...	...	...	...	...	...	50	129	31
1876.....	5	...	20	...	...	...	...	...	...	26	1	97
1877.....	17	...	53	...	...	...	...	...	...	41	2	197
1878.....	13	...	...	...	...	...	...	...	..	50	...	7
1879.....	7	...	...	...	...	...	...	...	...	38	...	2
1880.....	7	...	...	...	...	...	...	...	...	29	...	1
1881.....	...	6	...	...	...	...	...	...	...	33	45	7
1882.....	5	...	4	16	...	6	15	...	10	36	...	20
1883.....	10	...	7	26	...	1	28	...	2	64	...	10
1884.....	16	1	7	19	...	1	15	...	4	50	1	12
1885.....	14	9	...	11	1	...	5	10	...	30	20	...
1886.....	9	1	...	25	...	...	13	...	...	47	1	...
1887.....	70	...	2	27	...	...	15	...	...	112	...	2
1888.....	37	...	2	30	...	2	13	...	1	80	...	5
1889.....	41	...	1	40	...	...	32	...	...	113	...	1

NOTE.—Particulars for Launceston, Country Districts, and All Tasmania are not available for the years left blank.

As it is of the greatest importance that we should have as clear a knowledge as possible of this terrible disease, I have thought it desirable to reproduce the following extracts on the subject from Dr. Hirsch's splendid work on Geographical and Historical Pathology :—

Typhoid Fever.

"Associated with certain conditions of locality. In its *mode of occurrence and diffusion in space* typhoid shows a peculiarity which distinguishes it very characteristically from all other acute infective diseases, and stamps it as a morbid process intimately bound up in its origin with *conditions of locality.* Typhoid occurs sporadically unusually often ; in many other instances it is prevalent as an endemic ; or, finally, it attains to an epidemic effusion of longer or shorter duration. But these typhoid endemics or epidemics are always confined within local limits ; they never spread over considerable tracts of country ; the disease has never assumed the character of a wide-spread epidemic or of a pandemic. And if there have been, from time to time, epidemic outbreaks of it simultaneously at many places near to or remote from one another, these have not had any intimate connexion, as in the case of wide-spread epidemics of cholera, scarlatina, typhus, or yellow fever ; but it is generally in them a matter of local conditions making themselves felt at a number of points simultaneously, but independently of each other.

"The epidemics of typhoid fever," says Besnier, "are *local* epidemics, and their exacerbations are absolutely *local* also. While typhoid was raging in an intense form at Lyons, not long ago, I took the trouble to ascertain that its type

at Paris was simple and benign. While it is to-day raging at Paris severely and extensively, it continues rare and benign elsewhere, even in the same country at the same moment, often even within the same town, and under a perfectly uniform constitution of the atmosphere."

"Typhoid in this respect connects most closely with malarial diseases, without, however, attaining the same wide diffusion. This strictly local character of the disease comes out with quite peculiar prominence in the fact that it very often remains confined to single quarters of a town, to single streets or groups of houses, not unfrequently even to single buildings, to institutions for the reception of certain classes, such as barracks, educational institutes, boarding houses, and prisons, or even to private houses, the whole neighbourhood round the narrowly circumscribed focus of disease enjoying a complete immunity.

"The smallest mortality (326), and the largest (1208), both occur in years (1878 and 1872) with moderate rainfall (the mean for fifteen years at Berlin being 260·64″); the second largest (939) falls in a very wet year; but there is no constant relation discoverable between the volume of the annual rainfall and the height of the death-rate. The following table shows the relation between the death-rate in autumn and the kind of weather in the preceding summer :—

TABLE of the Autumnal Death-rate from Typhoid at Berlin, and of the Weather during the previous Summer.

Year.	No. of Deaths.	Summer.		Autumnal.	
		Temperature.	Rainfall.	Temperature.	Rainfall.
1871	280	13·86R.	115·20″	6·25R.	43·86″
1878	121	14·60	94·59	8·62	30·38
1877	253	15·53	89·28	7·48	51·48
1873	236	14·39	81·51	8·20	51·70
1876	205	15·26	62·94	7·40	65·12
1875	344	15·86	62·17	6·56	99·04
1874	260	14·88	54·91	8·54	22·47
1872	596	14·78	39·47	9·20	79·58

"The severest autumnal epidemic (1872), under a very high temperature and copious rains, followed on a very dry and moderately warm summer; the next most severe autumnal epidemic (1875) falls in a cool and very wet autumn, which had been preceded by a warm and moderately damp summer; the third in order of severity (1871), under a very cool temperature (*i.e.*, 1·25° R. below the mean) and moderate rains, followed an excessively wet (nearly 30″ above the mean) and cool summer; and the circumstances of the fourth severe epidemic (1877) are similar. The smallest mortality (1878) falls in a warm and dry autumn, which had been preceded by a moderately warm and very wet summer. Lastly, I shall advert to the circumstances in question as they obtained in the two severe winter epidemics of 1871-72 (229 deaths), and 1872-3 (218 deaths); the winter of 1871-72 was cold and moderately dry, and was preceded by a dry and cold autumn; the winter of 1872-73 was unusually warm and dry, but it was preceded, on the other hand, by a very warm and damp autumn.

"There are few points in the etiology of typhoid on which there is so much agreement in the opinions of observers as on the influence exerted by these nuisances on the development of epidemics or endemics of typhoid, or

on the occurrence of isolated cases ; although there is still much difference of opinion as to the import of the connection which subsists between the cause of the disease and the morbid condition ensuing. The best evidence of this connection has been obtained naturally from experiences in small narrowly circumscribed and more easily surveyed fields of observation—in single houses, public institutions, and the like. It is just in these cases that one learns how, amidst seemingly good hygienic circumstances, the conditions for an outbreak of typhoid fever are furnished by badly laid, insufficiently emptied, choked, or ill-ventilated drains, by leaking or over-filled cesspools, and the like; we see cases of typhoid, singly or in groups, beginning to occur from the moment the noxious influences associated with these nuisances make themselves felt and precisely among those who occupy the rooms or buildings exposed to those influences in one way or another (of which more anon), and we find that the attacks cease to occur when the defects are repaired. But evidence on a large scale for the importance of this etiological factor in the production of typhoid is furnished by the lowering of the typhoid sick-rate and death-rate in towns through attention to the cleansing of fæcal matters from the streets, the houses, and the soil, and through an efficiently carried-out system of drainage and sewerage; and this evidence comes mostly from the country which takes incontestably the first place among the States of Europe for its sanitary administration, as laid down by statute—I mean England."

Influence of Season as regards Typhoid.

There can be no doubt that climate and season are very important factors as regards the prevalence or intensity of Typhoid. As regards season, it has been observed that, whether the number of deaths in any year be few or many, the relative mortality usually follows a regular curve of intensity, rising rapidly from December to its highest point in March and April, and falling still more abruptly to the beginning of its minimum period, commencing in July and closing with November. Thus the mean of the last six years shows that the proportion of deaths in the first six months exceeds the second six months by 69·09 per cent. ; thus—

	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Deaths during 1st 6 months	24	57	41	21	37	83	64	86
„ „ 2nd 6 months	12	7	9	9	10	29	16	27
	36	64	50	30	47	112	80	113
Deaths per 10,000 of population ...	2·98	5·15	3·89	2·36	3·43	8·01	5·53	7·59

Average rate for last eight years, 4·88.

The following gives the mean percentage value of each month during last six years :—

PERCENTAGE of Deaths for each Month.

Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
8·56	12·96	15·74	18·75	14·13	6·71	6·02	4·40	3·70	4·17	1·62	3·24	100

The high death-rates due to Typhoid in the years 1887 to 1889 are quite exceptional for Tasmania, and it is gratifying to be able to record that the results of the current year shows a marked decline in the number of deaths from this extraordinary epidemic.

In Queensland and New Zealand, however, even the high rate of 1887 has been exceeded, as shown in the following abstract :—

		Rate per 10,000.
Queensland	1875	9·16
New Zealand.....	„	9·47
Queensland	1878	9·53
Ditto	1883	8·89
Ditto	1884	18·15
Ditto	1886	9·14

The 1883 rate for Tasmania, the third highest for this Colony, has also been exceeded in Victoria and New South Wales, as follows :—

		Rate per 10,000.
New South Wales...	1876	6·49
Victoria	1877	6·58
Ditto	1878	6·48
New South Wales	„	6·50
Victoria.....	1883	7·26
Ditto	1887	6·19
Ditto	1888	5·09

Typhoid in relation to Latitude and Climate.

Particular climates and latitudes favour the development of particular diseases to which they are peculiarly restricted; and in widely distributed diseases, such as Typhoid, particular climates and latitudes have a direct influence in favouring the greater intensity of its attack. Of course, altitude and other local circumstances may powerfully counteract the general influence in some places; but, nevertheless, speaking in a broad way, it is apparent that the attacks of Typhoid diminish in intensity in either hemisphere in passing from the equatorial to the polar latitudes; and just the reverse of this sometimes happens in other diseases. The data for establishing these conclusions are far from perfect, but still those obtainable unmistakably favour them.

AVERAGE Intensity of Typhoid, according to Latitude. Rate per 10,000 living.

Latitudes..	0-30.	30-50.	50-60.	60 and over.
NORTHERN.	...	Italy .... 9·37	Scotland 3·77	Sweden 2·87
	...	Austria..... 7·31	Ireland . 3·57	Russia . 2·07
	...	Spain ..... 5·63	England 2·70	
SOUTHERN.	Queensland 9·14	N. S. Wales 5·23		
	...	Victoria .... 5·23		
	...	New Zealand 3·87		
	...	Tasmania ... 3·49		

The hygiene, or healthiness, as a whole, of any one locality, therefore, cannot be properly estimated in contrast with any other by reference to the intensity of any one form of disease, because the prevailing diseases of different countries vary with the climate and latitude. In making contrasts of this kind between place and place, conclusions based upon any single form of disease would be misleading. The effects of all forms of disease are alone satisfactory in such comparisons.

INFANTILE MORTALITY.

In the following table is shown the Infantile Death-rate each year during the last 22 years :—

Deaths under 1 year of age per 100 Births.

1867	8·98	1875	13·11	1883	12·39
1868	11·73	1876	9·08	1884	9·98
1869	10·18	1877	11·37	1885	11·26
1870	9·76	1878	10·71	1886	10·48
1871	8·52	1879	10·77	1887	10·09
1872	10·17	1880	11·23	1888	9·43
1873	8·73	1881	10·34	1889	10·64
1874	10·36	1882	10·36		

Mean of 23 years, 1867-1889, inclusive, 10·42.

It will be seen from this table that the infantile mortality rate during 1889 is slightly above the average of the last 23 years; though this average, upon the whole, is a very satisfactory index of the health of the Island, as, next to New Zealand, it compares most favourably with other countries, as shown in the following classified order, beginning with the lowest or most favourable; thus :—

INFANTILE Mortality in various Countries compared.

		Deaths under 1 year per 100 Births.
1. New Zealand ...	mean of 19 years, 1866-1886* ...	9·65
2. Tasmania	„ 23 „ 1867-1889 ...	10·42
3. New South Wales ...	„ 19 „ 1866-1886* ...	11·45
4. Victoria	„ 19 „ „ * ...	12·35
5. Queensland... ...	„ 19 „ „ * ...	13·15
6. South Australia ...	„ 19 „ „ * ...	14·41
7. England	„ 10 „ 1875-1884 ...	14·40

* The figures marked with a star are taken from Hayter's *Year Book* (1887-8, p. 334.)

From this table it appears that the Colonies, with the exception of South Australia, are more favourable to infant life than England. The Infantile Death-rate of England is best contrasted with that of Tasmania, by stating that if it were as low as that of Tasmania, the lives of 44,697 infants in the year 1887 would have been saved to England. The same contrast with South Australia would represent a saving of 485 lives of infants in that Colony in the year 1886. This positive vital advantage as regards Tasmania is of more importance than is usually supposed; for if we invert the contrast between Tasmania and South Australia, we find that it represents the saving of 200 lives to Tasmania in the year 1886 alone,—a number nearly equal to our total losses from typhoid during the five years ending the year 1886.

DEATHS and Diseases in Hospitals.

CLASS OF DISEASE.	CASES TREATED.							
	1888.				1889.			
	In-patients	Out-patients.	All Cases.	Per cent. to Total.	In-patients.	Out-patients.	All Cases.	Per cent. to Total.
Zymotic	623	292	915	20·35	678	273	951	22·57
Parasitic	8	67	75	1·67	19	38	57	1·35
Dietic.....	85	5	90	2·02	67	6	73	1·73
Constitutional	232	172	404	8·98	223	196	419	9.94
Developmental	43	51	94	2·09	33	33	66	1·57
Local.....	962	1192	2154	47·92	879	1088	1967	46·68
Violence	290	174	464	19·32	267	175	442	10·49
Ill-defined & non-specified	78	221	299	6·65	94	145	239	5·67
TOTAL	2321	2174	4495	100·00	2260	1954	4214	100·00

DISEASES and Deaths in Hospitals—*continued.*

CLASS OF DISEASE.	DEATHS.											
	1886.			1887.			1888.			1889.		
	No.	Per cent. to Total Deaths.	Per cent. to Class Cases.*	No.	Per cent. to Total Deaths.	Per cent. to Class Cases.*	No.	Per cent. to Total Deaths.	Per cent. to Class Cases.*	No.	Per cent. to Total Deaths.	Per cent. to Class Cases.*
Zymotic	22	9·65	6·15	81	28·32	10·19	49	19·07	7·85	69	27·82	10·18
Parasitic	1	0·44	10·00	5	1·75	35·71	1	0·39	12·50	5	2·02	26·32
Dietic	1	0·44	1·22	—	—	—	2	0·78	2·35	2	0·81	2·99
Constitutional	45	19·74	20·00	48	16·78	19·35	39	15·17	16·81	32	12·90	14·35
Developmental	6	2·63	25·00	10	3·50	19·23	19†	7·39	44·19†	12†	4·84	36·36†
Local	124	54·38	11·04	127	44·41	11·81	126	49·03	12·99	102	41·13	11·61
Violence	17	7·46	4·66	14	4·89	4·33	19	7·39	6·55	24	9·68	8·99
Ill-defined and non-specified	12	5·26	12·37	1	35	1·59	2	0·78	2·56	2	0·80	2·13
TOTAL	228	100·00	9·98	286	100·00	10·87	257	100·00	11·07	248	100·00	10·97

* Deaths of out-patients not being recorded in relation to Hospitals, the percentages are calculated relative to cases of in-patients.
† All these cases died of "old age."

Relative to the number of cases treated as In-patients, the number of deaths represent 10·97 per cent., which, compared with the year 1888, is 0·10 lower.

DEATHS in the Public Institutions situated in the Districts of Hobart and Launceston, 1889.

Number of Deaths under each Age-group—

District.	1889.				
	0–5 years.	5–65 years.	65 years and over.	Ages not defined.	All Ages.
	No.	No.	No.	No.	No.
Deaths in Public Institutions—					
Hobart	2	112	125	—	239
Launceston	4	83	58	1	146
Total	6	195	183	1	385
Per cent. to Total Deaths, 1888	1·56	50·65	47·53	·26	100·

Thus it is shown that aged people contribute 47·53 of the total number of deaths in these Public Institutions. This is largely due to the deaths occurring in the Invalid Establishments for aged and infirm persons, which represent nearly half of the total deaths in all the Public Institutions, specified as follows :—

	No. of Inmates on 31st Dec. 1889.	No. of Deaths, 1889.
Hobart—		
New Town Pauper Establishment	520	116
Hospital for Contagious Diseases	—	—
Hospital for Insane, Cascades	51	1
General Hospital	73	118
Gaol for Males	111	4
Ditto for Females	15	—
Total, Hobart	770	239

	No. of Inmates on 31st Dec. 1889.	No. of Deaths, 1889.
Launceston—		
Gaol	63	1
Hospital	42	93
Invalid Depôt	166	52
Hospital for Contagious Diseases	2	—
Total, Launceston	273	146
Grand Total	1043	385

MARRIAGES.

The number of Marriages celebrated in Tasmania during the year 1889—967, or 6·50 per 1000 persons living—is greater than that of the

previous year by 16; and, relatively, our marriage-rate for the year 1889 is less than the average marriage-rate of the last decade by 0·95 per 1000 persons living.

The following comparative table for the last 39 years shows how closely our marriage-rate corresponds with the fluctuations of external trade, which also is a most sensitive index of changes in material welfare :—

Period.	Marriages per 1000 Persons.	Total Value Export and Import Trade per head. £
Average of Five years, 1851–55*	18·85	44·17
Ditto, 1856–60	9·40	28·51
Ditto, 1861–65	7·24	19·66
Ditto, 1866–70	6·30	16·78
Ditto, 1871–75	6·87	18·78
Ditto, 1876–80	7·51	24·01
Ditto, 1881–85	8·02	25·70
Ditto, 1886	7·26	22·75
Ditto, 1887	6·70	21·75
Ditto, 1888	6·58	20·14
Ditto, 1889	6·50	20·64

* The period when, owing to the discovery of gold in Victoria, an extraordinary development of trade in Tasmania took place.

This table is confirmatory of opinions on the subject advanced by the Registrar-General of England; and it shows that the corresponding rise and fall between the marriage-rate and the value and extent of trade in each period have a most intimate relation with each other, and can in no way be regarded as a mere coincidence. In the diagram prepared to show the progress of the Colony since the year 1816 this relationship is more readily appreciated.

The following table shows, in the order of the higher marriage-rate, the principal Districts and Divisions in Tasmania for the year 1889, together with figures for the previous three years for the purpose of comparison :—

	No. of Marriages.				No. of Marriages per 1000 Persons.			
	1886.	1887.	1888.	1889.	1886.	1887.	1888.	1889.
Urban Districts—								
Hobart	300	270	281	284	9·83	8·65	8·27	8·10
Launceston	235	248	225	211	12·37	12·71	10·76	9·79
Total Urban Districts...	535	518	506	495	10·80	10·21	9·21	8·74
Country Districts—								
North-Western Division..	173	156	177	166	7·84	6·77	7·86	7·16
North-Eastern Division...	96	92	89	110	4·55	4·21	4·07	4·88
Midland Division	80	88	82	87	4·49	4·78	4·35	4·48
South-Eastern Division ...	86	69	85	84	4·14	3·22	3·87	3·71
South-Western Division...	15	16	12	25	3·57	3·67	2·81	5·69
Total Country Districts	450	421	445	472	5·23	4·72	4·97	5·12
TOTAL FOR TASMANIA	985	939	951	967	7·26	6·70	6·58	6·50

Among country districts, it will be observed that with respect to the higher marriage-rate the North-Western Division of the Island maintains the leading position. The very high marriage-rate in urban as compared with country districts has already been referred to. The absence of officiating ministers in some country districts has the effect of causing the marriage ceremony to be celebrated in urban districts in many places. Another reason for this difference, and perhaps the more important one, is that in urban districts the females are greatly in excess of males, while the converse of this is true in respect of country districts. Marriages, as a rule, are celebrated in the district in which the bride resides.

The extent to which marriages have been celebrated by the principal religious denominations, and comparisons with the three previous years, are shown as follows :—

	Marriages, 1886.		Marriages, 1887.		Marriages, 1888.		Marriages, 1889.	
	No.	Per cent. to Total.	No.	Per cent. to Total.	No.	Per cent. to Total.	No.	Per cent. to Total.
Church of England	291	29·58	276	29·31	258	27·21	284	29·37
Congregational Union	136	13·82	110	11·73	102	10·33	109	11·27
Wesleyan Methodist Church	122	12·40	136	14·50	133	13·97	146	15·09
Church of Rome	147	14·94	109	11·62	137	14·39	119	12·32
Presbyterian Church	88	8·84	103	10·98	75	7·88	81	8·38
Free Church of Scotland	54	5·49	48	5·12	74	7·77	68	7·03
Baptist Church	92	9·35	100	10·66	100	10·50	89	9·20
Primitive Methodist Church	28	2·85	24	2·56	42	4·41	37	3·83
All others	27	2·73	33	3·52	30	3·54	34	3·51
TOTAL	985	100·00	939	100·00	951	100·00	967	100·00

Thus it would appear that the first-mentioned denomination (the Church of England) celebrated 29·37 per cent. of all the marriages contracted during the year.

VACCINATION.

The number of persons vaccinated throughout the Island during the year 1889, according to Report of Secretary Central Board of Health, is 1177. Of this number 168 cases, or 14·15 per cent., were seen on the eighth day, and only 912 cases, or 76·84 per cent., are reported as successful.

The compulsory clause of the Vaccination Act is not now enforced in Tasmania.

REGISTRATION.

During the year 1889 there were added to the Births, Deaths, and Marriage Registers of Tasmania 8789 names, independently of the notices in respect of vaccination.

The following shows the number of Registrations under the various heads for the year 1889, together with comparisons with the previous year and with the year 1880 :—

	1889.	1888.	1880.
Persons married	1934	1902	1680
Births	4757	4777	3739
Deaths	2098	2036	1832
TOTAL	8789	8715	7251

CHAPTER X.

Trade and Interchange.

EXPORTS AND IMPORTS.

THE total colonial and foreign trade of Tasmania for 1889, as represented by imports and exports, is shown as follows :—

	Amount.	Per head.	Per square mile.
	£	£ s. d.	£
Imports	1,611,035	10 16 6	61·45
Exports	1,459,857	9 16 2	55·69
TOTAL	3,070,892	20 12 8	117·14

Taken together, the amount of the imports and exports for 1889 is £33,513 above the average of the last five years—or £1·28 per square mile. As compared with the year 1888 the imports show an increase of £371, or 0·04 per square mile; and the exports an increase of £125,992, or 4·81 per square mile.

There are various disturbing influences in making comparisons between any two particular years; and the only satisfactory mode of measuring the tendencies of trade by the means of export and import values is to compare the means of successive periods of greater duration than one year. The following table has been prepared upon this method. The extent and general tendency of our export and import trade of Tasmania during the last 61 years, with the exception of the first and last broken periods, is based upon the mean yearly value of each succeeding quinquennial period; thus:—

MEAN Yearly Value of successive Quinquennial or lesser periods since 1822.

	Period.	Mean Yearly Value.			Mean Yearly Value of both Imports and Exports per square mile.
		Imports.	Exports.	Both.	
		£	£	£	£
1	Years 1822–25 inclusive	47,029	30,249	77,278	2·94
1	Years 1826–30 ditto.....	204,248	93,805	298,153	11·37
1	Years 1831–35 ditto.....	421,913	195,364	617,277	23·54
1	Years 1836–40 ditto.....	711,916	616,798	1,328,714	50·68
2	Years 1841–45 ditto.....	621,649	496,783	1,118,432	42·66
2	Years 1846–50 ditto.....	622,451	569,255	1,191,706	45·45
3	Years 1851–55 ditto.....	1,587,994	1,358,728	2,946,722	112·41
4	Years 1856–60 ditto.....	1,254,824	1,174,027	2,428,951	92·65
4	Years 1861–65 ditto.....	876,902	936,263	1,813,165	69·16
4	Years 1866–70 ditto.....	870,387	804,312	1,674,699	63·88
5	Years 1871–75 ditto.....	1,027,232	913,231	1,940,463	74·01
5	Years 1876–80 ditto.....	1,280,637	1,355,336	2,635,973	100·57
5	Years 1881–85 ditto.....	1,669,651	1,532,822	3,202,473	122·16
5	Years 1886–89 ditto.....	1,643,721	1,393,658	3,037,379	115·86

From the above table we can readily recognise five distinct periods marking the upward and downward tendency of the colonial and foreign trade of Tasmania.

The first period had a duration of 19 years (1825—1840) in which the combined values of imports and exports increased at an average rate of £2·98 *per square mile per year*; the second period, from 1841 to 1850 inclusive (10 years), when the values gently declined at the average rate of £0·52 *per square mile per year*; the third period, from 1851 to 1855 inclusive (5 years), when, owing to the gold discovery in Victoria, the values suddenly increased at an average rate of £13·39 *per square mile per year*; the fourth period, from 1856 to 1870 (15 years), marks an interval covering many important changes in the internal and external affairs of the Colony; among which may be noticed the withdrawal of English troops, and the consequent lessening of Imperial expenditure

and local consumption. At the same time the temporary advantage gained during the former period (the third) was gradually passing away owing to the rapid development of Victoria. This Colony during the early part of the fourth period was largely dependent upon Tasmania for agricultural products; but, notwithstanding its increasing population, agriculture made progress in Victoria at a greater proportionate rate, and the effect of which was, ere the fourth period closed, to convert the principal consumer of our surplus agricultural products into one of our most formidable rivals in the grain markets of Australia.

It is not surprising, therefore, to find that during the interval of the fourth period the value of our export and import trade gradually declined at an average rate of £3·23 *per square mile per year;* and that the close of it was marked by general depression, financial difficulties, and even (1870) a decline in population.

From 1870 we enter upon the fifth period, when, owing to the introduction of railways, the eradication of scab in sheep, but principally to the discovery and development of our tin and gold resources, there has been a continuous upward tendency; the average rate for the latter period being £38·60 *per square mile per year*, or 60·43 per cent. above that of the five years' average ending in 1870.

Although the total nominal value of imports and exports during the years 1853-5 respectively exceeds even the nominal value of imports and exports during some of the recent years, it must not be inferred that the greater value is a fair index of the relative productiveness of the two periods so far as Tasmania is concerned; for if we analyse the exports during 1855, we will find that of the £1,428,629 total exports there was only a sum of about £838,000, or about 58 per cent. of the whole, representing the actual manufactures or produce of Tasmania; the remainder, equal to 42 per cent. of total exports, being re-exports the produce of manufactures of other countries. It is also important in making comparisons to note that the effect of enhanced prices during the gold-rush period was such that the quantities then exported at a nominal value of £838,000 would only represent about £555,580 of the same class of goods exported during the year 1882. From these considerations, notwithstanding the large nominal values of 1853-4, it is clear that Tasmania, in the last year, not only supplies locally a population of greatly above double the number, but, in addition, she exported (the produce of the Colony) £1,459,857, which, though only of this nominal value, actually represents more than three times the extent of the produce of the Colony exported in 1854.

Thus it is shown that mere reference to figures, without careful analysis and qualification, are apt to lead to very erroneous conclusions. Before satisfactory comparisons can be made as regards production and balance of trade, it is necessary among other things to study the approximate effects produced by—

1. The various methods employed by importers, exporters, and Customs authorities in declaring nominal values.
2. The effect of different tariffs and prices, and the local effects of seasons or unusual disturbances.
3. The stimulating effects of foreign loans for the construction of public works such as railways, roads, and bridges,—first, upon imports

during construction, and afterwards upon exports, which are gradually augmented by returns from the newly created centres of production, in which of course are included exports representing the interest upon foreign loans so expended.

4. The relative proportion of goods imported for home consumption and goods destined for re-export in the same or in a different form, and in regard to the latter to note the probable increase in value due to the employment of local capital and labour, and local products.
5. The relative proportion of local and foreign products and manufactures in total exports.
6. The allocation and distribution of the values due to shipping and commercial transit agencies.
7. The effects of natural resources ; and in ratios, the effects of density of population and the extent of area.

These observations are sufficient to show that the interpretation of what may be considered the simple figures of ordinary statistical tables require some degree of care and skill. No table, however apparently simple, can be properly interpreted without qualification and discretion.

Direction of Imports.

It is difficult to arrive at the value of the import trade in respect of any particular country, the custom being to refer all imports, whether transhipments or re-exports, to the last port of clearance. Owing to the increasing facilities offered by steam communication, direct trade with Tasmania is falling off in favour of indirect trade principally through Victoria, which, from its geographical position, is our nearest point of junction with the great oceanic lines of steamers with Europe.

Detailed Summary of the Quantities and Values of External Trade— 1879 *to* 1889.

In the four following tables are given particulars of the quantities and values of the principal items of external trade of Tasmania for the years 1879 and 1885–9. These are, for greater convenience, arranged in a natural order of classification.

IMPORTS—QUANTITIES.

RETURN of the Quantities of some of the principal Articles imported into Tasmania, 1879 and 1885-1889.*

Class.	Order.	Articles.	1879.	1885.	1886.	1887.	1888.	1889.
I.	14	Manure ....tons	21,218	10,975	12,680	5677	4067	3588
		Spirits, Methylated ....gallons	397	453	1615	815	847	1106
II.	20	Corn Sacks ....No.	351,928	531,773	810,440	538,548	560,234	} 1,280,408
		Bags, Gunny .... ditto }	170,664	pkgs. 171	No. 56,984	9000	} 47,241	
		Bags, other .... ditto }		130,652	No. 109,994	98,943		
		Woolpacks ....ditto	33,041	29,544	21,111	37,629	34,434	39,337
		Beef and Mutton ....1000 lbs.	606	1731	549	791	2090	1169
III.	21	Butter, Cheese, and Lard ....lbs.	116,480	52,607	6780	24,382	341,973	394,622
	22	Flour ....1000 lbs.	134	1357	446	2191	2439	699
		Fruits—Dried .... lbs.	457,860	705,457	591,621	689,891	718,613	676,890
		Fruits—Green ....bushels	...	pkgs. 13,633	16,386	bush. 24,685	18,898	22,060
		Grain—Wheat ....1000 lbs.	695	15,277	16,381	17,859	12,983	9496
		Rice ....ditto	716	1104	1062	1619	1242	1231
		Sugar .... cwts	80,267	117,302	90,965	105,411	103,251	111,419
		Molasses....ditto	544	1012	666	888	1108	42
	23	Cocoa and Chocolate ....lbs.	36,577	62,586	99,579	58,491	92,228	79,559
		Coffee .... ditto	60,983	69,843	83,890	62,539	62,469	59,729
		Tea ....1000 lbs	650	873	862	937	1045	874
		Spirits—						
		Brandy ....gallons	24,051	23,463	23,190	23,374	23,025	20,151
		Geneva ....ditto	20,231	16,525	15,193	15,442	12,813	13,696
		Gin ....ditto	892	2478	1969	1616	1890	1279
		Whisky ....ditto	10,754	21,741	26,557	25,039	27,664	24,221
		Rum ....ditto	23,499	26,287	24,145	22,651	24,903	22,261
		Cordials ....ditto	77	2279	226	330	229	138
		Perfumed ....ditto	301	408	269	380	265	316
		Wines ....ditto	25,877	20,593	22,368	26,685	32,942	20,606
		Malt Liquors ....ditto	59,598	63,015	54,616	59,495	67,875	62,758
		Vinegar ....ditto	22,605	25,760	42,607	39,197	19,374	28,945

		Hops .....lbs.	28,217	2358	491	8465	5330	7553
		Malt .....bushels	15,139	9	61	121	2673	1160
		Tobacco and Cigars.....lbs.	166,880	243,353	256,404	258,295	273,560	276,601
		Snuff .....lbs.	1015	1268	567	590	1026	694
IV.	24	Hides and Skins .....cwts.	2327	pkgs. 1031	3787	cwts. 4370	3259	1969
		Tallow .....lbs.	204,104	„ 927	509	3491	214,760	91,504
V.	28	Coal and Coke‡ .....tons	19,055	37,768	36,098	29,474	31,836	37,537
VI.	33	Live Stock—						
		Cattle.....No.	1476	1353	601	1907	2975	2683
		Horses.....ditto	23	216	83	70	43	151
		Sheep .....ditto	13,132	65,339	52,088	50,790	76,097	66,621

* As definite particulars are not given in respect of many articles imported direct during the particular year, the weights and measures are in such cases based upon the articles actually entered for "Home Consumption." † The quantities for the previous years could not be ascertained. ‡ Does not include Coal imported for Government and Railway purposes.

Imports—Values.

Return of the Values of the principal Articles imported into Tasmania, 1879 and 1885-1889.

CLASS I.—ART AND MECHANIC PRODUCTIONS.	1879.	1885.*	1886.*	1887.*	1888.*	1889.*
	£	£	£	£	£	£
Books, &c.						
Books, printed, and Stationery	35,804	40,582	39,486	43,694	37,405	42,232
Musical Instruments	9628	14,162	11,782	7992	8337	9492
Works of Art, Toys.						
Works of Art, Toys, Philosophical Instruments, &c....	...	15,543	12,788	13,394	11,870	10,776
Arms, Ammunition, &c.						
Gunpowder, Shot	...	3688	3883	3292	4138	3680

* Includes certain articles not embraced in the Abstracts of former years.

RETURN of the Values of the principal Articles imported into Tasmania—*continued.*

	1879.	1885.*	1886.*	1887.*	1888.*	1889.*
	£	£	£	£	£	£
MACHINES, TOOLS, AND IMPLEMENTS.						
Cutlery and Platedware	6190	2836	2747	2381	2524	3106
Ironmongery, Hardware, Holloware.	92,816	136,157	121,102	116,833	132,797	107,353
Machinery	20,327	30,977	29,369	30,564	31,493	64,140
CARRIAGES, HARNESS, &c.						
*Saddlery, Leatherware, &c.	...	17,124	14,721	12,968	9625	13,855
SHIPS, BOATS, &c.	...	959	2123	957	973	2075
BUILDING MATERIAL	...	2552	3075	2266	2766	3612
FURNITURE	6382	33,010	18,595	13,818	11,725	14,946
CHEMICALS.						
Manure ...	21,218	43,007	17,103	21,288	19,458	17,228
Matches, Lucifer and Vestas	2916	1486	2403	3900	3038	2725
Medicines and Drugs	14,273	18,897	28,413	30,270	24,844	24,387
Paints, Colors, and Chemicals	4280	6400	9430	7701	8829	13,608
TOTALS CLASS I.	213,834	367,380	317,020	311,318	309,822	333,215
CLASS II.—TEXTILE FABRICS AND DRESS.						
WOOL AND WORSTED, SILK AND COTTON MANUFACTURES.						
Blankets	6309	3133	2686	508	302	379
Carpets and Rugs	8059	9153	8421	7913	6994	6103
Fabrics—Cotton, Wool, and Silk	...	416,214	451,512	387,618	392,423	378,601
*Woollens	4434	...	...	...	...	...
DRAPERY, HABERDASHERY, DRESS.						
*Apparel and Slops	11,672	...	...	...	...	...

Boots and Shoes	34,883	50,053	52,280	31,483	39,343	41,249
*Drapery	333,108	...	...	...	...	...
*Hats and Caps	1570	...	...	...	...	...
MANUFACTURES OF FIBROUS MATERIALS.						
*Bagging	2720	...	...	...	...	...
Canvas	849	710	746	432	1820	1384
Corn Sacks	11,396	13,846	16,332	12,024	15,461	30,657
Bags—Gunny, &c.	4252	2739	2254	1683	1003	
Rope and Twine	4209	6439	7461	7014	8182	11,171
Woolpacks	3967	3900	2520	3998	3764	4253
TOTALS CLASS II.	427,428	506,187	544,212	452,673	469,292	473,797
CLASS III.—FOOD, DRINKS, &c.						
ANIMAL FOOD.						
Beef and Mutton	...	23,302	5992	8518	20,667	9843
Butter, Cheese, and Lard	...	3098	263	996	14,042	14,149
Sundries	...	1678	1655	1059	2710	4601
VEGETABLE FOOD.						
Confectionery	6632	4366	3520	3218	4216	3531
Flour	745	6215	2069	11,051	10,230	3258
Fruits—Green	3621	6888	7557	9261	8919	7172
Dried	6121	12,503	7876	9253	9238	11,351
Grain—Wheat	3235	45,627	50,148	51,895	35,438	33,255
Rice	6259	11,998	6385	9912	7338	5994
Sugar	121,241	162,667	74,368	103,135	97,791	117,457
Other Vegetable Food	...	18,537	7340	11,237	36,534	12,337
Total Food	147,854	296,879	167,443	219,535	247,123	222,938
DRINKS AND STIMULANTS.						
Chicory	506	697	239	506	460	231
Cocoa and Chocolate	2182	3928	5099	3345	5486	4500
Coffee	3808	2419	2379	2898	3094	3327
Salt and Saltpetre	2366	2760	3323	2714	1783	3257
Tea	39,480	43,403	35,077	40,649	49,339	46,875
Vinegar	2658	2661	3915	3885	2030	2780

* New scale of Duties from 14th January, 1880, caused a change in the classification of some of the articles.

RETURN of the Values of the principal Articles imported into Tasmania—*continued.*

	1879.	1885.	1886.	1887.	1888.	1889.
FOOD, DRINKS, &c.—*continued.*	£	£	£	£	£	£
Tobacco, Cigars, and Snuff	13,514	21,784	23,180	19,825	24,507	26,639
Various Stimulants	...	8386	6942	6839	8497	7548
Hops	1618	107	25	318	169	659
Malt Liquors	8674	10,727	8942	13,316	12,638	14,112
Spirits and Cordials	25,740	25,481	29,249	31,453	31,652	29,494
Wines	10,361	12,466	9763	11,342	11,101	10,527
Total Drinks and Stimulants	110,907	134,819	128,133	137,090	150,756	149,949
TOTALS CLASS III.	258,761	431,698	295,576	356,625	397,879	372,887
CLASS IV.—ANIMAL AND VEGETABLE SUBSTANCES.						
ANIMAL SUBSTANCES.						
Candles	4906	11,406	10,426	9364	7024	3276
Tallow	2133	943	264	450	1902	725
Hides and Skins	4566	2237	7179	6344	7199	4269
Leatherware and Saddlery	11,626	*	*	*	*	828
Other Animal Substances	...	1799	1932	1963	1896	4697
VEGETABLE SUBSTANCES.						
Room and other Papers	14,139	21,124	19,266	17,392	21,082	18,612
Seeds and Plants	3420	6017	4256	5246	6259	6765
Timber	14,627	34,974	26,347	41,037	21,616	34,271
Other Vegetable Substances	...	6160	5424	4776	5663	11,428
OILS (not including for export)	11,441	20,048	13,232	11,914	17,939	17,112
TOTALS CLASS IV.	66,858	104,708	88,326	98,486	90,580	101,983
CLASS V.—MINERALS AND METALS.						
Articles connected with Mining*	...	...	...	...	...	...
Coal, Coke, &c.	14,981	42,866	37,349	31,837	33,237	38,851
Earthen and Glassware	18,422	16,992	16,715	16,467	14,226	21,521
Glass—Sheet, Crown, and Plate	2566	2965	3049	3468	2914	2649

Miscellaneous	...	8187	9931	11,534	8444	10,089
Gold—Specie	51,500	50,500	85,000	102,500	2018	1000
Silver—Specie	...	1500	8600	5674	11,100	692
Copper—Specie	...	55	20	20	20	110
Jewelry and Plate	13,449	10,951	9642	11,487	8528	8894
Copper and Lead	2465	983	397	713	1338	1428
Iron and Tin	23,539	32,783	23,873	28,449	21,935	33,322
Iron Fencing, &c.	...	9592	4224	5507	6831	13,932
Railway Material	24,809	3387	80,221	28,115	25,142	22,051
TOTALS CLASS V	151,731	180,761	279,021	245,771	135,733	154,539
CLASS VI.—LIVE ANIMALS AND PLANTS.						
Live Stock—Cattle	16,970	16,261	6899	21,050	41,871	33,087
Horses	2760	5425	3780	1380	2135	7010
Sheep	11,819	53,450	43,247	40,311	69,036	56,651
Pigs	...	14	35	40	10	10
Other	...	...	...	...	...	148
TOTALS CLASS VI	31,549	75,150	53,961	62,781	113,042	96,906
CLASS VII.—MISCELLANEOUS MATTERS.						
Oilmen's Stores	13,452	43,392	45,067	24,995	30,674	27,802
Ad valorem Goods	27,256	...	21,885	13,951	19,065	16,083
Government Stores	8729	38,247	97,379	18,329	32,887	33,446
Sundries	67,877	9936	14,121	11,888	11,690	377
TOTALS CLASS VII.	117,314	91,602	178,452	69,164	94,316	77,708
GRAND TOTALS	1,267,475	1,757,486	1,756,567	1,596,817	1,610,664	1,611,035
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Rate per head of Mean Population	11 7 11	13 5 11	12 19 3	11 8 4	11 3 3	10 16 6

* Nothing introduced so defined.

EXPORTS—QUANTITIES.

RETURN of the Quantities of the principal Articles of Home Produce exported from Tasmania in the years 1879 and 1885–1889.

ARTICLES.		1879.	1885.	1886.	1887.	1888.	1889.
Saddlery and Leatherware	tons	...	76	123	117	90	65
	packages	1921	263	3	2	5	1
Butter and Cheese	cwts.	128	618	1190	209	2	...
Bran and Pollard	tons	60	432	1018½	253	40	...
	100 bushels	...	...	...	...	...	...
Flour	tons	1	1	8	51	5	1
Fruit — Pulp	packages	...	...	2524	2484	6031	684
Fruit — Preserved	cwts.	34,963	24,541	18,945	17,345	14,649	7982 1915 pkgs.
Fruit — Green	100 bushels	1423	3037	2929	3192	3097	3870
Grain — Wheat	"	151	...	...	...	...	11
Grain — Oats	"	1091	277	2187	397	31	2690
Grain — Barley	"	84	2	608	273	40	16
Oatmeal	tons	209	242	287	132	54	62
Vegetables — Carrots, Turnips, Cabbages	"	39	27	529	477	131	914
Vegetables — Onions	"	92	23	15	8	...	51
Vegetables — Potatoes	"	9345	21,634	31,546	35,789	13,003	41,390
Vegetables — Pease and Beans	100 bushels	55	131	153	134	63	168
Malt	bushels	...	1800	3380	404	2124	988
Hops	cwts.	4988	7092	4751	4241	4348	4930
Hides and Skins	packages	262	...	...	...	...	...
Ditto	No.	...	30,928	129,351	186,457	403,579	543,186
Rabbit Skins	No. in thousands	1023	2872	1185	2181	1962	1819
Wool	100 lbs.	73,850	57,741	81,758	97,402	69,770	62,409
Bark	tons	5813	12,287	12,030	9689	7814	10,575
Timber — Palings	No. in thousands	3760	2503	2120	1530	1674	1417
Timber — Treenails, Spokes, &c.	"	316*	333	418	391	267	262
Timber — Posts and Rails, &c.	"	128	71	49	12	55	37
Timber — Piles, Beams, &c.	No.	...	...	75	...	...	4517 feet
Timber — Laths and Shingles	No. in thousands	3129	643	589	120	5	190
Timber — Sawn and Hewn	1000 feet	9346	7085	6296	7503	15,164	12,231
Timber — Logs	"	1	...	...	63	250	212

	Slabs ... "	...	...	...	...	...	...
	Shaped Pieces ... No.	8	9153	8842	3917	11,632	9497
	Blackwood ... 1000 feet	812	1596	1186	320	1174	1574
	Ditto, Logs ... ft.	...	...	...	735,060 ft.	765,907 ft.	1,504,723
	Battens ... 1000 feet	8	...	...	...	...	...
Oil	Sperm ... tuns	245	146	188	115	63	131
	Black and various ... "	...	1	1	80	3	5
Gold ... ounces		38,896	37,498	27,757	37,252	33,560	33,234
Galena ... tons		...	...	...	...	...	7
Silver Ore ... tons		...	...	...	...	...	195
Tin	Ore ... tons	247	...	...	1	2	31
	Smelted ... "	4316	4242	3776	3606	3775	3764
Live Stock	Horses ... No.	137	137	87	74	65	59
	Sheep ... "	938	3249	2207	4005	4140	4660

* Including Staves.

Exports—Values.

Return of the Values of the principal Articles exported from Tasmania in the years 1879 and 1885–89.

	1879.	1885.	1886.	1887.	1888.	1889.
CLASS I.—ART AND MECHANIC PRODUCTIONS.	£	£	£	£	£	£
Books, Musical Instruments, &c. ...	...	2183	1076	2951	1306	2415
Machines, Tools and Implements ...	...	4288	5210	6397	10,912	8320
Carriages, Harness, &c. (Saddlery and Leatherware) .	...	12,706	9650	11,753	8985	6730
Building Material, Furniture, &c. ...	...	2155	5484	1612	1854	751
Total Class I.	...	21,332	21,420	22,713	23,057	18,216
CLASS II.—TEXTILE FABRICS AND DRESS.	...	2724	6213	5955	5245	2950
CLASS III.—FOOD, DRINKS, &c.						
Food.						
Butter and Cheese ...	595	3472	6166	859	8	...
Bacon, Hams, Fish, Rabbits, &c. ...	...	1119	1998	645	913	216
Fruit—Preserved and Green ...	151,802	164,986	148,596	129,901	120,494	128,822
Grain—Wheat ...	4242	...	3	...	1	258

RETURN of the Values of the principal Articles exported from Tasmania—*continued.*

	1879.	1885.	1886.	1887.	1888.	1889.
	£	£	£	£	£	£
Grain—Oats	15,726	3357	22,152	4503	573	36,672
Barley	2428	42	9453	5099	1288	415
Meal—Flour	5	10	93	533	60	14
Oatmeal	7347	4653	4663	2176	994	1256
Potatoes	37,387	57,871	95,452	85,487	35,256	167,739
Miscellaneous Food	3043	4084	10,441	3936	1874	6558
Total Food	222,575	239,594	299,017	233,139	161,461	341,950
DRINKS AND STIMULANTS.						
Hops	26,512	27,661	14,557	13,696	13,802	23,115
Miscellaneous Drinks and Stimulants	...	4030	3693	3313	3011	1924
Total Drinks and Stimulants	26,512	31,691	18,250	17,009	16,813	25,039
TOTAL CLASS III.	249,087	271,285	317,267	250,148	178,274	366,989
CLASS IV.—ANIMAL AND VEGETABLE SUBSTANCES.						
ANIMAL SUBSTANCES.						
Hides, Skins, &c.	20,340	30,096	14,859	26,965	34,071	34,671
Tallow	...	1274	1240	1925	2697	2923
Wool	407,227	260,480	310,934	415,425	306,930	283,237
Miscellaneous	...	661	391	762	349	2493
VEGETABLE SUBSTANCES.						
Bark	30,800	83,580	79,606	60,898	61,829	87,248
Timber	59,713	45,077	37,353	37,411	71,198	63,161
Miscellaneous	...	8140	16,557	4317	8999	38,758
Oils—Sperm	13,810	6696	9463	5380	2570	5000
Black, various	...	51	41	2016	121	152
TOTAL CLASS IV.	531,890	436,055	470,444	555,099	488,764	516,643

CLASS V.—MINERALS AND METALS.						
Stone, Clay, Earthenware, &c.	...	1011	76	57	9206	8515
Gold	145,723	141,319	104,402	140,584	127,562	123,486
Miscellaneous	...	1568	957	1793	702	85
Iron, Silver, Lead, &c.	...	2062	995	2833	2306	5487
Tin, Ore and Metal	303,203	357,587	363,364	407,857	426,326	345,407
TOTAL CLASS V.	448,926	503,547	469,794	553,124	566,102	482,980
CLASS VI.—LIVE ANIMALS AND PLANTS.						
Cattle	...	...	...	140	50	...
Horses	7180	18,100	10,320	4705	7327	8826
Sheep	31,324	58,105	32,689	54,337	56,045	60,472
Miscellaneous	...	110	132	166	348	20
TOTAL CLASS VI.	38,504	76,315	43,141	59,348	63,770	69,318
CLASS VII.—MISCELLANEOUS MATTERS.						
Indefinite*	32,690	2435	3261	2984	8653	2761
PRODUCE OF COLONY	1,289,395	1,299,011	1,312,416	1,425,457	1,303,908	1,442,605
BRITISH AND FOREIGN PRODUCE	11,702	14,682	19,124	23,914	29,957	17,252
TOTAL EXPORTS	1,301,097	1,313,693	1,331,540	1,449,371	1,333,865	1,459,857
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
RATE PER HEAD OF MEAN POPULATION	11 14 0	9 18 9	9 16 6	10 7 3	9 4 10	9 16 2

* Prior to the year 1882 a great number of articles, owing to lack of definite information, were classified under this head; subsequent to that time such articles have been distributed under their proper classes.

IMPORTS AND EXPORTS.—Decennial Return.

YEAR.	TOTAL IMPORTS.	EXPORTS.			RATE PER HEAD OF MEAN POPULATION OF—	
		Produce of the Colony.	*British and Foreign Produce.*	TOTAL.	*Imports.*	*Exports.*
	£	£	£	£	£ s. d.	£ s. d.
1880	1,369,223	1,481,330	30,601	1,511,931	12 1 0	13 6 2
1881	1,431,144	1,548,116	7460	1,555,576	12 4 0	13 5 2
1882	1,670,872	1,578,517	8872	1,587,389	13 16 10	13 3 0
1883	1,832,637	1,698,334	33,265	1,731,599	14 14 9	13 18 6
1884	1,656,118	1,448,714	27,143	1,475,857	12 18 0	11 9 11
1885	1,757,486	1,299,011	14,682	1,313,693	13 5 11	10 9 3
1886	1,756,567	1,312,416	19,124	1,331,540	12 19 3	9 16 6
1887	1,596,617	1,425,457	23,914	1,449,371	11 8 4	10 7 3
1888	1,610,664	1,303,908	29,957	1,333,865	11 3 3	9 4 10
1889	1,611,035	1,442,605	17,252	1,459,857	10 16 6	9 16 2

RETURN showing the Value of Goods to and from Tasmania transhipped in Victoria during the Nine Years ending 1889.

YEAR.	VALUE OF GOODS			
	Transhipped to the Colony.		Received from the Colony.	
	Value—£.	Packages.	Value—£.	Packages.
1881	336,324*	—	130,259	—
1882	187,559	12,079	161,292	1503
1883	151,278	18,248	183,817	1693
1884	133,138	11,136	126,186	2211
1885	137,520	12,857	107,829	14,343
1886	138,996	22,916	258,205	120,630
1887	218,902	9698	200,108	89,263
1888	260,040	—	222,836	—
1889	221,188	—	364,586	—

*Exclusive of numerous undescribed packages the values of which were not ascertained.

The two following Abstracts relating to Exports and Imports give the comparative extent and general character of external trade during the years 1879, 1888, and 1889.

ABSTRACT of the Nature and Extent of External Trade.

IMPORTS.

CLASS.	1889.	1888.	1879.	1889, Increase or Decrease compared with 1888. Increase.	1888. Decrease.	1879. Increase.	1879. Decrease.
			NUMERICAL.				
	£	£	£	£	£	£	£
I. Art and Mechanic Productions	333,215	309,822	213,834	+23,393	...	+119,381	...
II. Textile Fabrics and Dress	473,797	469,292	427,428	+ 4,505	...	+ 46,369	...
III. Foods, Drinks, and Stimulants	372,887	397,879	258,761	...	—24,992	+114,126	...
IV. Animal & Vegetable Substances	101,983	90,580	66,858	+11,403	...	+ 35,125	...
V. Minerals and Metals	154,539	135,733	151,731	+18,806	...	+ 2808	...
VI. Live Animals and Plants	96,906	113,042	31,549	...	—16,136	+ 65,357	...
VII. Miscellaneous Matters	77,708	94,316	117,314	...	—16,608	...	—39,606
				58,107	57,736	383,166	39,606
Total	1,611,035	1,610,664	1,267,475	+ 371	...	+343,560	...
			CENTESIMAL.				
I. Art and Mechanic Productions	20·68	19·24	16·87	+ 7·55	...	+ 55·83	...
II. Textile Fabrics and Dress	29·41	29·14	33·72	+ 0·96	...	+ 10·85	...
III. Foods, Drinks, and Stimulants	23·15	24·70	20·42	...	— 6·70	+ 44·10	...
IV. Animal & Vegetable Substances	6·33	5·62	5·27	+ 12·59	...	+ 52·54	...
V. Minerals and Metals	9·59	8·43	11·97	+ 13·36	...	+ 1·85	...
VI. Live Animals and Plants	6·02	7·02	2·49	...	—16·65	+207·16	...
VII. Miscellaneous	4·82	5·85	9·26	...	—21·37	...	— 33·76
Total	100·00	100·00	100·00	+ ·02	...	+ 27·11	...
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Total Imports per Head	10 16 6	11 3 2	11 7 11	+0 6 8	...	...	—0 11 5
Ditto per square mile £	61·45	61·44	48·35	+ ·01	...	— 13·10	...

EXPORTS.

CLASS.	1889.	1888.	1879.	1889, Increase or Decrease compared with 1888. Increase.	1889, Increase or Decrease compared with 1888. Decrease.	1889, Increase or Decrease compared with 1879. Increase.	1889, Increase or Decrease compared with 1879. Decrease.
	NUMERICAL.						
	£	£	£	£	£	£	£
I. Art and Mechanic Productions	18,216	23,057	*	...	— 4841	+ 18,216	...
II. Textile Fabrics and Dress	2950	5245	*	...	— 2295	+ 2950	...
III. Food, Drinks, and Stimulants	366,989	178,274	249,087	+ 188,715	...	+117,902	...
IV. Animal and Vegetable Substances	516,643	488,764	531,890	+ 27,879	...	...	—15,247
V. Minerals and Metals	482,980	566,102	448,926	...	— 83,122	+ 34,054	...
VI. Live Animals and Plants	69,318	63,770	38,504	+ 5548	...	+ 30,814	...
VII. Miscellaneous Matters	2761	8653	32,690	...	— 5892	...	—29,929
Total	1,459,857	1,333,865	1,301,097	222,142	—96,150	203,936	45,176
				+ 125,992	...	+158,760	...
	CENTESIMAL.						
I. Art and Mechanic Productions	1·25	1·73	*	...	—26·58	...	...
II. Textile Fabrics and Dress	0·20	0·39	*	...	—77·80	...	...
III. Food, Drinks, and Stimulants	25·14	13·37	19·15	+105·86	...	+ 47·33	...
IV. Animal and Vegetable Substances	35·39	36·64	40·88	+ 5·70	...	...	— 2·95
V. Minerals and Metals	33·08	42·44	34·50	...	—17·21	+ 7·59	...
VI. Live Animals and Plants	4·75	4·78	2·96	+ 8·70	...	+ 80·03	...
VII. Miscellaneous Matters	0·19	0·65	2·51	...	—215·18	...	—1083·99
Total	100·00	100·00	100·00	+ 9·45	...	+ 12·20	...
	£ s. d.	£ s. d.	£ s. d.	£ s. d.			£ s. d.
Total Exports per head	9 16 2	9 4 10	11 14 0	0 11 4	...	...	—1 17 10
Ditto per square mile £	55·69	50·88	49·63	4·81	...	+ 6·06	...

* Owing to a change in classification, figures for 1879 cannot be accurately ascertained and distributed under these heads.

Direction of Trade.

It is difficult to arrive at the true value of Tasmanian trade with respect to any particular country, the custom being to refer all imports and exports, whether transhipments or re-exports, to the immediate port of entry or clearance. Owing to the increasing facilities offered by steam communication *viâ* Victoria and New South Wales, the direct trade to or from Tasmania is falling off (especially as regards exports) in favour of an *indirect* trade through the ports of the two leading colonies, which are our most convenient points of junction with the great oceanic lines of European steamers.

Direction of Import Trade.

The immediate direction of the import trade of Tasmania, showing the changes from direct to indirect communication, is shown in the following summary of proportions, in the order of the greater proportion during the last year.

PROPORTION of Direct Import Trade with various Countries.

	Average of Decade 1873-1882.	Year 1883.	Year 1888.	Year 1889.
1. Victoria	54·37	49·18	51·79	48·04
2. United Kingdom	30·05	34·45	30·14	32·13
3. New South Wales	6·42	7·25	10·33	11·97
4. Other British Colonies	8·64	8·27	6·43	5·64
5. Foreign Countries	0·52	·85	1·31	2·22
	100·00	100·00	100·00	100·00

Although Victoria stands highest in the list, it is so in virtue of the inclusion of transhipments and re-exports from the United Kingdom and other countries; and it is roughly estimated that the latter amounts to about 76 per cent. of the total trade referred to Victoria.

During the year 1889 the element of transhipments included alone amounted to £221,188, and this element represented the following sums in the previous eight years; viz.; 1881, £336,324; 1882, £187,559; 1883, £151,278; 1884, £133,138; 1885, £137,520; 1886, £138,996; 1887, £218,902; 1888, £260,040.

Proportion of Direct Export Trade with various Countries.

The following summary shows the proportion of direct trade with each of the principal countries, and the variations occurring since 1873. The order begins with the highest, and in the sequence exhibited during the last year, 1889, thus—

PROPORTION of Direct Export Trade with various Countries.

	Average of Decade 1873-1882.	Year 1883.	Year 1888.	Year 1889.
1. Victoria	27·38	34·37	44·71	49·14
2. New South Wales	21·15	36·08	34·48	29·57
3. United Kingdom	41·98	21·03	16·59	17·25
4. Other British Colonies	9·40	7·62	4·22	4·04
5. Foreign Countries	4·90	—	—	—
	100·00	100·00	100·00	100·00

It will be observed that within the period covered by these comparisons the direct trade with the United Kingdom, formerly taking the highest position, now occupies the third position, with only about a sixth of the trade. Victoria and New South Wales together take 78·71 per cent of the whole export trade *direct*, but as this largely consists of Gold, Tin, Bark, and Wool, it is apparent that the major portion of our export trade is ultimately destined for the United Kingdom. This, with similar trade in Queensland, considerably swells the imports and exports of the two colonies named above that which more properly belongs to their actual trade, and slightly exaggerates the importance of the Australasian trade as a whole.

Extent of the External Trade of Tasmania with various Countries.

The following tables gives proportionally a synopsis of the extent and general direction in which the trade of Tasmania has been moving during the years 1879, 1888, and 1889. The selection is made of the first and two last years of the decade, for the purpose of more satisfactorily marking the progress over a large period :—

Imports.			Country.	Exports.		
1889.	**1888.**	**1879.**		**1889.**	**1888.**	**1879.**
£	£	£	*Numerical.*	£	£	£
517,681	485,391	337,050	United Kingdom (direct)	251,835	221,347	600,876
773,917	834,200	713,175	Victoria	717,290	596,321	361,909
192,759	166,410	107,309	New South Wales ..	431,741	459,853	202,387
90,857	103,485	97,032	Other British Colonies	58,975	56,344	135,725
35,821	21,178	12,909	Foreign Countries .	16	—	200
1,611,035	1,610,664	1,267,475	TOTAL	1,459,857	1,333,865	1,301,097
			Centesimal.			
32·13	30·14	26·59	United Kingdom (direct)	17·25	16·59	46·18
48·04	51·79	56·27	Victoria	49·14	44·71	27·82
11·97	10·33	8·47	New South Wales..	29·57	34·48	15·55
5·64	6·43	7·65	Other British Colonies	4·04	4·22	10·44
2·22	1.31	1·02	Foreign Countries..	—	—	0·01
100·00	100·00	100·00	TOTAL.....	100·00	100·00	100·00

Nature of Trade with particular Countries.

Fuller information with respect to the character of the trade with each country is given in the following table :—

NATURE and Extent of Tasmanian Trade with various Countries during the Years 1887, 1888, and 1889.

	IMPORTS.			EXPORTS.		
	1887.	1888.	1889.	1887.	1888.	1889.
	£	£	£	£	£	£
United Kingdom direct.						
1. Art and Mechanic Productions	109,213	112,500	131,298	4486	2301	342
2. Textile Fabrics and Dress...	166,080	210,637	227,156	66	201	45
3. Food, Drinks, and Stimulants	46,241	45,309	41,390	...	...	7341
4. Animal and Vegetable Substances	23,488	24,338	24,609	342,719	217,652	242,821
5. Minerals and Metals	62,111	52,728	56,894	2913	1193	793
6. Live Animals and Plants	...	...	5	...	...	...
7. Miscellaneous	28,424	39,879	36,329	90	...	493
Total United Kingdom...	435,557	485,391	517,681	350,274	221,347	251,835
Per cent. to Total	(27·29)	(30·14)	(32·13)	(24·17)	(16·59)	(17·25)
Victoria.						
1. Art and Mechanic Productions	163,955	153,170	162,855	9013	14,278	12,447
2. Textile Fabrics and Dress ...	275,062	247,649	227,281	2400	2584	1762
3. Food, Drinks, and Stimulants	211,491	229,516	192,607	83,544	55,632	126,662
4. Animal and Vegetable Substances	40,837	36,753	35,041	158,110	207,205	176,398
5. Minerals and Metals	117,880	43,872	48,873	159,982	282,546	373,244
6. Live Animals and Plants	46,294	76,650	76,019	22,415	27,041	25,058
7. Miscellaneous	34,239	46,600	31,241	1405	7035	1719
Total Victoria	889,758	834,200	773,917	436,869	596,321	717,290
Per cent. to Total	(55·72)	(51·79)	(48·04)	(30·14)	(44·71)	(49·14)
New South Wales.						
1. Art and Mechanic Productions	24,794	27,933	24,248	7214	5454	5050
2. Textile Fabrics and Dress ...	10,545	9,725	16,993	3368	2376	1133
3. Food, Drinks, and Stimulants	44,734	43,272	66,970	141,670	102,365	217,029
4. Animal and Vegetable Substances	8030	6931	10,153	32,818	31,667	57,443
5. Minerals and Metals	65,189	38,036	47,961	389,558	280,972	107,695
6. Live Animals and Plants	15,539	34,691	19,855	35,478	35,709	42,890
7. Miscellaneous	5810	5822	6579	1123	1300	501
Total New South Wales.	174,641	166,410	192,759	611,229	459,853	431,741
Per cent. to Total	(10·94)	(10·33)	(11·97)	(42·16)	(34·48)	(29·57)
New Zealand.						
1. Art and Mechanic Productions	493	1350	3799	1027	639	377
2. Textile Fabrics and Dress ...	746	1126	1330	61	34	10
3. Food, Drinks, and Stimulants	17,317	43,814	49,268	17,801	14,122	9320
4. Animal and Vegetable Substances	5040	11,192	4743	14,226	17,861	21,930
5. Minerals and Metals	50	168	183	631	666	1248

NATURE and Extent of Tasmanian Trade with various Countries—*continued.*

	IMPORTS.			EXPORTS.		
	1887.	**1888.**	**1889.**	**1887.**	**1888.**	**1889.**
	£	£	£	£	£	£
6. Live Animals and Plants	280	1711	597	1455	1020	370
7. Miscellaneous	357	1309	3242	50	318	45
Total New Zealand.....	24,283	60,670	63,162	35,251	34,660	33,300
Per cent. to Total.....	(1·52)	(3·77)	(3·92)	(2·44)	(2·60)	(2·28)
Queensland.						
1. Art and Mechanic Productions	1257	2966	840	268	370	...
2. Textile Fabrics and Dress ...	21	1	...	...	...	...
3. Food, Drinks, and Stimulants	...	132	...	4751	5746	4306
4. Animal and Vegetable Substances	800	...	...	1293	1742	1203
5. Minerals and Metals	...	30	...	...	...	...
6. Live Animals and Plants	650	...	...	...	...	1000
7. Miscellaneous	43	11	...	316	...	...
Total Queensland	2771	3140	840	6628	7858	6509
Per cent. to Total.....	(0·17)	(0·19)	(0·05)	(0·46)	(0·59)	(0·45)
South Australia.						
1. Art and Mechanic Productions	1997	1048	1140	705	15	...
2. Textile Fabrics and Dress....	21	153	970	...	50	...
3. Food, Drinks, and Stimulants	16,814	15,782	3494	2287	369	2315
4. Animal and Vegetable Substances.....	350	10	26	5933	12,627	16,848
5. Minerals and Metals.....	99	...	279	...	...	...
6. Live Animals and Plants.....	18	...	430	...	...	...
7. Miscellaneous	147	271	61	...	...	3
Total South Australia.....	19,446	17,264	6400	8925	13,061	19,166
Per cent. to Total.....	(1·22)	(1·07)	(0·40)	(0·62)	(0·98)	(1·31)
Western Australia.						
3. Food, Drinks, and Stimulants	...	...	...	..	40	...
5. Minerals and Metals.....	...	...	...	...	725	...
Total Western Australia.	...	...	...	...	765	...
Per cent. to Total.....	...	...	...	...	(0·05)	...
Mauritius.						
2. Textile Fabrics, Dress, &c....	145	...	...	100	...	...
3. Food, Drinks, and Stimulants	18,828	17,615	18,775	95	...	...
Total Mauritius.....	18,973	17,615	18,775	195	...	...
Per cent. to Total.....	(1·18)	(1·09)	(1·17)	(0·01)	...	...
Other British Colonies.						
1. Mechanic Productions	...	4796	1680	...	...	...
3. Food, Drinks, and Stimulants.....	...	...	...	...	...	16
Per cent. to Total.....	...	(0·30)	(0·10)	...	...	...

NATURE and Extent of Tasmanian Trade with various Countries—*continued.*

	IMPORTS.			EXPORTS.		
	1887.	1888.	1889.	1887.	1888.	1889.
America.	£	£	£	£	£	£
1. Art & Mechanic Productions	8109	6049	7195	...	...	...
2. Textile Fabrics and Dress....	53	1	1	...	...	...
3. Food, Drinks, and Stimulants	1200	2439	...	...	...	...
4. Animal and Vegetable Substances	2953	7173	9917	...	...	...
5. Minerals and Metals.....	442	499	349	...	...	...
7. Miscellaneous.....	144	424	...	...	...	...
Total America.....	12,901	16,585	17,462	...	...	...
Per cent. to Total.....	(0·80)	(1·03)	(1·08)	...	...	...
Germany—Total Imports.....	2372	...	59	...	...	...
China—Total Imports.....	...	...	750	...	...	...
Per cent. to Total	...	...	(0·05)	...	...	...
Sweden.						
1. Art & Mechanic Productions	...	10	160	...	...	...
4. Animal and Vegetable Substances.....	16,115	4183	17,390	...	...	...
5. Minerals and Metals.....	...	400	...	...	...	...
Total Sweden.....	16,115	4593	17,550	...	...	...
Per cent. to Total.....	(1·01)	(0·28)	(1·09)	...	...	...
All Countries.						
Values.						
1. Art and Mechanic Productions	311,318	309,822	333,215	22,713	23,057	18,216
2. Textile Fabrics and Dress....	452,673	469,292	473,797	5955	5245	2950
3. Food, Drinks, and Stimulants	356,625	397,879	372,887	250,148	178,274	366,989
4. Animal and Vegetable Substances.....	98,485	90,580	101,983	555,099	488,764	516,643
5. Minerals and Metals.....	245,771	135,733	154,539	553,124	566,102	482,980
6. Live Animals and Plants.....	62,781	113,042	96,906	59,348	63,770	69,318
7. Miscellaneous	69,164	94,316	77,708	2984	8653	2761
Total for all Countries...	1,596,817	1,610,664	1,611,035	1,449,371	1,333,865	1,459,857
Percentages.						
1. Art and Mechanic Productions	19·50	19·24	20·68	1·57	1·73	1·25
2. Textile Fabrics and Dress...	28·35	29·14	29·41	0·41	0·39	0·20
3. Food, Drinks, and Stimulants	22·33	24·70	23·15	17·26	13·37	25·14
4. Animal and Vegetable Substances....	6·17	5·62	6·33	38·30	36·64	35·39
5. Minerals and Metals.....	15·39	8·43	9·59	38·16	42·44	33·08
6. Live Animals and Plants.....	3·93	7·02	6·02	4·09	4·78	4·75
7. Miscellaneous.....	4·33	5·85	4·82	0·21	0·65	0·19
Total for all Countries...	100·00	100·00	100·00	100·00	100·00	100·00
Total Value of Domestic Products	...	...	...	1,425,457	1,303,908	1,442,605
Total Trade per head..... £ *s. d.*	11 8 4	11 3 2	10 16 6	10 7 3	9 4 10	9 16 2
Ditto per square mile.... p. c.	60·9	61·4	61·4	55·3	50·9	55·7

Nature and Importance of various branches of Tasmanian Trade.

The relative extent of particular branches of import and export trade during 1889 is shown in the order of their importance, in the following classified abstract:—

Imports, 1889.	Per cent.	Exports, 1889.	Per cent.
1. Textile Fabrics and Dress.	29·41	1. Animal and Vegetable Substances, (including Wool, Timber, and Bark)	35·39
2. Foods, Drinks, and Stimulants	23·15	2. Minerals and Metals	33·08
3. Art & Mechanic Productions	20·68	3. Foods, Drinks, & Stimulants	25·14
4. Minerals and Metals	9·59	4. Live Animals and Plants	4·75
5. Animal and Vegetable Substances	6·33	5. Art and Mechanic Productions	1·25
6. Live Animals and Plants	6·02	6. Textile Fabrics and Dress	0·20
7. Miscellaneous	4·82	7. Miscellaneous	0·19
	100·00		100·00

This comparison readily expresses the chief characteristics of our exchange trade,—Textile Fabrics and Dress taking the first position as regards imports, and Animal and Vegetable Substances the corresponding position in respect of exports. It will be observed, as regards our own exports, that fully 98 per cent. represent raw or natural products; and that art, mechanics, and manufactured products do not exceed 2 per cent. of the whole.

Comparison of Trade at different Periods.

It is difficult by the aid of figures alone to trace the exact effects of various influences which combine to form the aggregate trade of any one year. A diagram showing the progress of the Colony since the year 1816 (*see* Chapter xvi.) exhibits these effects more successfully. The indices of this progress have been confined to Export Trade, Population, General Revenue, and the Marriage-rate. No other figures that might be selected could better exhibit or more sensitively indicate the changes affecting the prosperity of each succeeding year.

Glancing over the curves of Export Trade, coloured red, the eye is at once arrested by three bold prominences indicating the height to which the nominal value of export trade had attained at successive periods in Tasmania. The first peak, in 1838, marks a partial exodus of the stock and population of Tasmania to form the first settlement in the now vigorous Colony of Victoria. The second peak, culminating in the years 1853-4, marks a sudden brief expansion of trade, but chiefly a second considerable exodus of stock and population drawn to Victoria in consequence of the discovery of gold in that Colony. The third prominence, still ascending, began in the year 1870, and marks the period of the discovery and development of the gold and tin mines of Tasmania. It will be noted that the nominal values of export trade and the marriage-rate alone are favourably affected, as shown by the two first prominences. Population declined, or its increase was seriously arrested, solely owing to the exodus referred to.

The distinction marking the third expansion of trade, commencing in 1870, as compared with the two previous years, is that it is solely due to internal progress or attraction, or prosperity within the Colony itself, and not, as in two other cases, to external progress, or attraction and prosperity beyond the Colony of Tasmania.

Trade.—Comparison with Different Countries.

The Amount of Trade per Head of Population a misleading Index of Progress.

While, for the purpose of measuring the progress of external trade, it is necessary to employ some common standard,—such as "per head of population," or "per square mile,"—it cannot be too strongly urged that inferences as regards the internal progress of a country—based upon the extent of our external trade, as indicated by the ratios "per head"—are often widely erroneous. The extent of an external trade depends, primarily, as much upon the number of our own wants as upon the extent of our powers locally to provide for them. Thus it is conceivable that the most savage and the most civilised countries might equally have a very small external trade as indicated by "per head" of population or otherwise. In the savage state this result would be chiefly due to the lack of knowledge and paucity of wants. In the other, the like result would be chiefly due to the perfection of powers within its own borders to supply nearly all local wants.

If this be conceded, we are also better enabled to understand how it is that, in the earlier stages of a colony's history, the "rate per head" of external trade is invariably higher than in its later and more developed stage, even although upon the whole there was a steady progress in the absolute values of Imports and Exports. In truth, under such circumstances, the test of the progress of external trade by "rate per head," unless taken into consideration with the "extent of territory per head," is utterly fallacious. As a general rule, the larger the extent of territory per head,—*i.e.*, the less dense the population,—the greater will the rate "per head" be as regards the value of Exports when reckoned per square mile of territory. It will be seen that those countries which are most densely populated have also the greatest relative value of Exports, when reckoned per square mile of territory; and this mode of comparison, taken by itself, is not so apt to mislead as when measured by the factor "per head."

In young countries differing in size and development, and whose industries and external trade are mainly connected with raw or natural products, comparisons between them can only be made satisfactorily on the basis of area. Comparisons on the basis of population are misleading where arts and manufactures do not form the principal part of a country's industry. This is at once apparent by comparing the trade of densely populated countries, whose trade is largely composed of manufactured products, with thinly populated countries, whose trade is mainly composed of raw or natural products.

Comparison with

CLASS I.—Countries densely populated, whose Trade is mainly composed of Arts and Manufactures.

		AREA— Square miles.	POPULATION.		EXPORT OF DOMESTIC PRODUCTS.		
			Persons.	Per sq. mile.	Amount.	Per sq. mile.	Per head.
		No.	No.	No.	£	£	£
United Kingdom	1889	121,481	37,808,892	311·23	248,091,959	2042·23	6·56
Germany	1885	211,168	46,855,704	221·89	143,015,000	677·31	3·05
France	1886	204,177	38,218,900	187·18	129,952,000	604·98	3·40
Belgium	1888	11,373	6,030,043	530·21	49,748,000	4374·22	8·25

Comparison with

CLASS II.—Countries thinly populated, whose Trade is mainly composed of Raw or Unmanufactured Products.

		AREA— Square miles.	POPULATION.		EXPORT OF DOMESTIC PRODUCTS.		
			Persons.	Per sq. mile.	Amount.	Per sq. mile.	Per head.
		No.	No.	No.	£	£	£
United States of America	1889	3,602,990	66,000,000	18·32	152,192,210	42·24	2·31
Dominion of Canada	1888	3,406,542	4,946,497	1·45	16,077,412	4·72	3·25
Colonies of Australasia	1889	3,161,457	3,786,827	1·20	49,639,929	15·70	13·11
(1) Victoria	1889	87,884	1,118,028	12·72	9,776,670	111·25	8·74
(2) New Zealand	1889	104,471	620,279	5·94	9,042,008	86·55	14·58
(3) Tasmania	1889	26,215	151,480	5·78	1,442,605	55·03	9·52
(4) New South Wales	1889	310,700	1,122,200	3·61	17,423,311	56·08	15·53
(5) Queensland	1889	668,497	406,658	·61	7,511,744	11·24	18·47
(6) South Australia	1889	903,690	324,484	·35	3,694,692	4·09	11·39
(7) West Australia	1889	1,060,000	43,698	·04	748,899	·71	17·14

The preceding comparisons clearly demonstrate the fallacy of determining the relative progress of the trade of different countries by means of the "per-head" factor, which unfortunately is now too frequently applied as a comparative test, with results more or less contradictory or misleading.

The extent of domestic products exported *per square mile of territory* is shown to be the only common standard for comparison which approaches any degree of accuracy, and in this respect it will be found that Tasmania takes up a most satisfactory position in Class II., *i.e.*, among countries thinly populated, whose trade is mainly composed of raw or unmanufactured products.

By the contrast of countries highly advanced in arts and manufactures (Class I.), with those still mainly in the agricultural and pastoral stage (Class II.), it is clearly established, as a general rule, that the largeness of the factor of trade *per head* is more indicative of the relative meagreness of population than of the relative richness of trade. On the other hand, it almost invariably follows that the country which has the richest trade *per square mile of territory* has also the greatest density of population. These conclusions are most forcibly illustrated by contrasting the trade of the United Kingdom or Belgium (Class I.) with either South Australia or Western Australia (Class II.)

The high value of Raw Exports per head, such as wool and pastoral products, exported from the Australasian Colonies, indicate the high proportion which the *gratuitous gift of nature* contributes, rather than the energy or value contributed by *man's services* as exhibited in manufactured products.

This is significantly indicated in the domestic products exported from New South Wales: for out of the total of £12,884,000 exported in 1886, about £8,952,000, or 69·5 per cent. of the total value, only involved the *actual services* of about 1·63 *per cent. of its population*. This is evidence proving the direction of its industry; its poverty of population relative to area; and its extensive lands open to sheep-breeding, rather than the superior energy of its people, or the results of its fiscal policy.

These conclusions are also fully borne out by the progress of external trade in the Australasian group during the last fifteen years; and the following abstract demonstrates that the rate *per head* diminishes as density of population and absolute amount of trade increase: although the temporary fluctuations in 1883 and 1887 somewhat obscure this tendency.

ABSTRACT of External Trade in the Australasian Group from 1873 to 1889.

Year.	Amount in Thousands.		Per Head of Population.		Population per square mile.
	Imports.	Exports.	Imports.	Exports.	
	£	£	£	£	No.
1873	41,447	39,130	19·77	18·66	0·66
1878	50,882	44,365	19·55	17·04	0·82
1883	62,134	56,096	20·10	18·14	0·98
1887	57,255	50,553	16·12	14·24	1·12
1888	62,258	57,605	18·08	15·95	1·16
1889	68,849	62,586	18·45	16·75	1·20

Similar conclusions are also indicated by a study of the analysis of the external trade of British Possessions throughout the world, as shown in the following summary for 1888, from which it may be seen that the greatness of external trade may always be fairly gauged by the density of population, but not from the greatness or smallness of the amount of trade *per head* of population. Undoubtedly, the amount of Australasian trade is relatively far greater than other countries in a similar stage of development: but the rate *per head per se* is a fallacious index of progress, for, as sure as population and local production in other than raw products make headway, so surely will the rate *per head* of external trade diminish, although the aggregate amount of trade may be rapidly on the increase.

ABSTRACT showing the Extent of External Trade in various Groups of British Possessions in relation to Area and Population, Year 1888.

Imports.			Group of Possessions situated in	Exports.			Persons per square mile.
Amount. 000's omitted.	Per head.	Per square mile.		Amount. 000's omitted.	Per head.	Per square mile.	
£	£			£	£		
387,636	10·2	3203·6	Europe	298,578	7·98	2467·5	310·4
106,079	·52	115·0	Asia	113,532	·56	123·1	218·8
13,830	3·59	51·7	Africa	15,039	3·90	56·3	14·4
32,175	4·77	8·8	America	28,409	4·21	7·8	1·8
237	1·88	16·9	South Seas	465	3·69	33·2	8·9
65,256	17·23	20·6	Australasia	57,605	15·24	18·2	1·2
605,213	2·37	74·5	Total British Possessions	513,628	2·02	63·2	31·3

Shipping Tonnage and External Trade of British Possessions, Year 1888.

A fuller statement of the extent of trade and shipping of the various British Possessions is given in the following table, from which it will be seen that, next to the United Kingdom and India, Australasia takes up the most important position as regards the amount of external trade. In extent of area, Australasia—with the exception of the Dominion of Canada—is by far the greatest, representing more than a third (38·93 per cent.) of the area of all British Possessions.

External Trade of British Possessions, Year 1888.

000's omitted.

Area in thousand sq. miles.	Imports. From United Kingdom direct.	Imports. From all Countries.	Country.	Exports. To United Kingdom direct.	Exports. To all Countries.	Shipping. Total Tonnage entered and cleared.
	£	£		£	£	
			Europe.			
			United Kingdom with other British Possessions			
	...	86,916		...	91,772	
121·00	...	300,720	With Foreign Countries	...	206,806	68,519
	...	387,636	Total	...	295,578	
·00	809	...	Channel Islands	927	...	...
·00	763	...	Gibraltar	37	...	11,986
·00	...	...	Heligoland	...	...	...
·12	314	...	Malta and Gozo	149	...	10,545
121·12	...	387,636	Total Europe	...	298,578	91,050
			Asia.			
·06	211	...	Aden	287	...	...
25·30	741	4,145	Ceylon	2,532	2,790	4,458
·03	...	...	Cyprus	...	...	...
·03	3,003	...	Hong Kong	1,296	...	9,006
868·00	33,830	79,830	India	30,763	92,148	7,189
·03	...	75	Labuan	...	87	74
27·50	...	...	North Borneo	...	...	...
1·47	2,742	22,029	Straits Settlements	5,351	18,507	8,136
922·42	40,527	106,079	Total Asia	40,229	113,532	28,858
			Africa.			
·03	3	...	Ascension	...	...	...
214·00	4,214	7,014	Cape Colony	4,552	8,965	2,080
·07	314	103	Gambia	192	118	193
3·00		250	Sierra Leone		339	517
29·40	1	432	Gold Coast	647	381	560
1·07	...	442	Lagos	...	508	525
0·71	288	2,660	Mauritius	275	3,306	622
18·75	2,195	2,891	Natal	1,087	1,418	727
0·40	19	38	St. Helena	2	4	127
267·43	7,034	13,830	Total Africa	6,755	15,039	5,351
			America.			
·02	92	300	Bermudas	1	100	228
6·40	120	206	Honduras	229	213	253
109·00	795	1,586	British Guiana	1,128	2,025	558
4·46		191	Bahamas		122	198
·17		28	Turk's Islands		26	193
4·19		1,696	Jamaica		1,828	1,084
·78	2,518	1,470	Windward Islands	2,237	1,546	2,311
·66		405	Leeward Islands		509	1,374
1·75		1,944	Trinidad		2,133	1,271
3470·00	8,200	22,786	Canada	8,915	18,535	9,197
42·00	491	1,563	Newfoundland	352	1,372	596
3633·03	12,216	32,175	Total America	12,862	28,409	17,263

EXTERNAL Trade of British Possessions—*continued.*

000's omitted.

AREA in thousand sq. miles.	IMPORTS. From United Kingdom direct.	IMPORTS. From all Countries.	COUNTRY.	EXPORTS. To United Kingdom direct.	EXPORTS. To all Countries.	SHIPPING. Total Tonnage entered and cleared.
	£	£	*South Seas.*	£	£	
7·74	15	183	Fiji	...	377	101
6·50	31	54	Falkland Islands	81	88	54
14·24	46	237	Total South Seas ...	81	465	155
			Australasia.			
87·88	10,087	23,972	Victoria	5,844	13,854	4,308
311·09	9,095	20,886	New South Wales	8,708	20,860	4,765
668·49	3,017	6,647	Queensland	1,698	6,126	996
903·69	2,136	5,414	South Australia	3,096	6,984	1,974
1060·00	354	786	Western Australia	357	680	812
26·22	519	1,610	Tasmania	239	1,334	776
104·46	3,370	5,941	New Zealand	5,920	7,767	1,058
3161·83	28,578	65,256	Total Australasia ...	25,862	57,605	14,689
8120·07	91,427	605,213	Total of British Possessions	86,915	513,628	157,366

Trade of Australasia, 1874–1889.

The following summary shows the extent and the variation of the External Trade of Australasia :—

ABSTRACT of Australasian External Trade for the years 1874, 1879, 1884, and the years 1887–89.

000's omitted.

	1874.	1879.	1884.	1887.	1888.	1889.
	£	£	£	£	£	£
	TOTAL IMPORTS.					
New South Wales	11,293	14,198	22,826	18,806	20,886	22,863
Victoria	16,953	15,035	19,201	19,022	23,972	24,402
New Zealand	8121	8374	7663	6246	5942	6297
Queensland	2062	3080	6381	5822	6647	6052
South Australia	3983	5014	5749	5096	5414	6804
Tasmania	1257	1267	1656	1597	1611	1611
Western Australia	364	407	521	666	786	818
Total Australasia	44,033	47,375	63,997	57,255	65,258	68,847
	TOTAL EXPORTS.					
New South Wales	12,345	13,086	18,251	18,497	20,860	23,294
Victoria	15,441	12,454	16,050	11,351	13,854	12,734
New Zealand	5251	5743	7091	6866	7767	9339
Queensland	4106	3434	4673	6454	6126	7736

ABSTRACT of Australasian External Trade—*continued.*

000's omitted.

	1874.	1879.	1884.	1887.	1888.	1889.
	£	£	£	£	£	£
South Australia	4402	4762	6623	5331	6984	7259
Tasmania	925	1301	1475	1449	1334	1459
Western Australia	428	494	405	605	680	761
Total Australasia	42,898	41,274	54,568	50,553	57,605	62,589
Total Trade (Imports and Exports)	86,931	88,649	118,565	107,808	122,863	131,435

IMPORTANT Influences affecting the Values of Australasian Exchange Trade.

Number of Sheep in Australia—millions	No.	61·5	66·6	75·3	97·1	96·5	100·3
Wool exported—million lbs.	No.	231·7	297·9	469·4	554·6	561·7	642·4
Average price of Wool per lb.	*d.*	14·71	13·56	12·09	10·15	9·77	9·80
Ditto, Tin per cwt.	£	4·91	3·41	4·07	5·53	6·28	4·65
Ditto Raw Sugar, per cwt.	*s.*	22·42	20·22	15·51	12·16	13·56	15·51
Ditto Tea, per lb.	*d.*	17·00	14·68	11·78	10·58	10·99	10·79
Ditto Rum, per gall.	*s.*	2·26	1·68	1·70	1·59	1·64	1·66
Ditto other Spirits, per gall.	*s.*	3·02	3·30	3·60	3·00	2·42	2·19

Importance of Colonial and Foreign Trade of the United Kingdom.

The total amount of Import trade of the United Kingdom during the ten years ending in 1888 has varied from £363,000,000 in 1879 to £390,000,000 in 1884, and £387,000,000 in 1888. The proportion of Imports from the Colonies varied in the same time from £78,000,000 to £87,000,000, representing from about 21·5 to 22·1 per cent. of the total Import trade of the United Kingdom.

In the same period, the total value of Exports of the United Kingdom varied from £248,000,000 in 1879 to £295,000,000 in 1884, and £297,000,000 in 1888. The Colonial portion varied from 27 to 30 per cent. of the total Export trade, British and Foreign. The following table shows more fully the distribution and extent of the trade of the United Kingdom for the years 1879, 1883, and 1888 :—

DISTRIBUTION and Extent of the Trade of the United Kingdom, 1879 to 1888.

Imports, in Millions.			Country.	Exports, in Millions.		
1879.	**1883.**	**1888.**	From To	**1879.**	**1883.**	**1888.**
£	£	£	*British Colonies.*	£	£	£
24·6	38·8	30·7	India	22·7	33·3	33·8
21·9	25·9	25·8	Australasia	17·9	26·8	28·5
10·4	12·2	9·2	Canada and Newfoundland	6·1	10·1	8·6
22·0	21·7	21·2	Other Possessions	19·8	20·2	20·5
78·9	98·6	86·9	Total British Colonies	66·5	90·4	91·4
			Principal Foreign Countries			
91·8	99·2	79·7	United States	25·5	36·7	41·2
38·4	38·6	38·8	France	26·5	29·4	24·1
21·6	27·9	26·7	Germany	29·6	31·7	27·3
21·9	25·1	26·0	Holland	15·4	15·8	14·9
15·8	20·8	26·2	Russia	10·6	7·5	7·5
10·7	16·1	15·6	Belgium	11·8	14·7	12·9
8·3	11·8	11·2	Sweden and Norway	3·9	5·4	5·3
8·3	11·6	11·0	Spain	3·7	4·8	4·1
3·2	3·3	3·4	Italy	6·0	8·1	6·5
8·8	10·0	7·2	Egypt	2·2	3·5	2·9
3·4	5·4	4·2	Turkey	7·7	7·4	5·5
11·0	10·1	6·4	China	5·1	4·5	6·3
4·7	6·1	5·2	Brazil	5·9	7·0	6·5
0·8	0·9	2·6	Argentine Republic	2·1	5·0	7·8
4·6	6·2	7·0	Denmark and Iceland	1·9	2·5	2·4
3·0	3·4	3·0	Portugal	2·4	2·3	2·6
·4	·6	1·0	Japan	2·9	2·6	4·1
27·3	31·1	25·5	Other Countries	19·0	26·1	24·5
284·0	328·2	300·7	Total Foreign Countries	182·2	215·0	206·4
362·9	426·8	387·6	Total Trade of the United Kingdom	248·7	305·4	297·8
p.c.	p.c.	p.c.	*Percentage.*	p.c.	p.c.	p.c.
21·76	23·19	22·42	With British Colonies	26·91	29·51	30·54
78·24	76·81	77·58	With Foreign Countries	73·09	70·49	69·46
100	100	100	TOTAL	100	100	100

The World's External Trade.

It is not possible to give an exact statement of the external trade of the world, owing to the imperfect manner in which the Statistics are presented in several foreign countries. In some are recorded only the imports of articles for home consumption and the exports of domestic products; while in others the figures refer to *general* imports and exports irrespective of ultimate destination or source. Only a few countries show particulars of both forms of exchange trade. Most of the figures shown in the following table are taken from the official records of the United Kingdom prepared by Mr. Giffen for the year

1888. In two or three instances where the figures for this year are not available those referring to a former year are given.

The various countries are arranged according to the order of the importance of their trade. The British Empire, representing 27·86 per cent. of the total area and 30·51 per cent. of the total trade, takes the first position: her total trade (imports and exports) amounting to 1118·1 million pounds, or nearly equal to the trade of Germany, France, and the United States taken together. The next in importance is the German Empire with 476 millions, followed in order by France (379 millions), United States (296 millions), and Belgium (235 millions); Greece (with 8 millions) taking the lowest position in the order of all the countries shown.

In regard to the total value of the world's trade, representing 3664 million pounds sterling, it is shown that the British Empire takes the first position in relation to area—viz., £137·6 per square mile. Foreign Countries average £121·1 per square mile; and the average of the 24 great countries, embracing more than half the total land surface of the globe, represents a total trade of £125·7 per square mile.

The figures relating to the number and tonnage of merchant steam and sailing vessels belonging to each country can only be regarded as rough approximates. The totals show 116,228 vessels, with an aggregate tonnage of 21 millions. Nearly one-half of the tonnage belongs to vessels of the British Empire.

EXTERNAL Trade of the Principal Countries of the World, with Number and Tonnage of Merchant Ships owned by each Country, year 1887 *or* 1888.

Area, Square Miles.	Imports.			Exports.		Merchant Ships (Steam and Sailing).[a]	
	For Home Consumption.	Total.		Domestic Produce.	Total.	No.	Tonnage in thousands.
No. In thous.	£ In mills.	£ In mills.	*British Empire.*	£ In mills.	£ In mills.		
121·1	*	387·6	United Kingdom	233·8	298·5	21,896	7464
3161	*	65·2	Australasia	47·5	57·6	2849	386
923	*	79·8	India	*	92·1	10,486	1387
3914·9	*	72·6	Other British Possessions	*	64·7		
8120	*	605·2		...	512·9	35,231	9237
			Principal Foreign Countries.				
208·6	164·5	243·2	German Empire	160·2	232·5	3315	880
204	164·2	207·4	France	129·8	171·9	15,278	961
3580	148·3	150·8	United States	142·4	144·9	23,281	4191
11·4	61·3	123·4	Belgium	49·7	112·0	59	77
*	*	144·2	Hamburg	*	92·2	496	360
12·5	105·1	105·1[b]	Holland	91·4	91·4[b]	609	245
240·2	44·4	72·8[c]	Austria-Hungary	60·7	82·3[c]	367	218

* Information not available.

[a] Embracing all vessels above small coasting craft of small tonnage. [b] Home consumption or domestic products only. [c] Figures for 1885.

EXTERNAL Trade of the Principal Countries of the World—*continued.*

Area, Square Miles.	Imports.			Exports.		Merchant Ships (Steam and Sailing).[a]	
	For Home Consumption.	Total.		Domestic Produce.	Total.	No.	Tonnage in thousands.
No. In thous.	£ In mills.	£ In mills.		£ In mills.	£ In mills.		
110·6	46·9	49·1	Italy	35·6	37·8	6810	853
8450	38·6	38·6[b]	Russia	79·3	79·3[b]	6383[d]	756[d]
195·7	*	28·5	Spain	*	30·3	1698	598
295·3	*	26·7	Sweden and Norway	*	22·3	11,077	2034
3925	29·3	29·7	China	21·7	22·1	135	36
1158	19·1	19·1[b]	Argentine Confederation	14·0	14·0[b]	460	21
1264	*	18·6	Turkey	*	11·4	429	74
14·7	13·6[c]	15·2	Denmark	9·0	10·7	3344	270
12·8	8·0	8·0[b]	Egypt	10·8	10·8[b]	31	24
256·7	12·6	13·6	Chili	15·2	15·6	166[c]	72[c]
50·2	*	12·4	Roumania	*	10·2	22	5
155·5	9·8	9·8	Japan	9·7	9·8	1284	133
34·4	10·0	12·2	Portugal	5·4	7·5	479	78
741·8	*	7·4[c]	Mexico	*	10·1	57	20
24·9	4·3	4·9	Greece	3·8	4·1	5157	258
72·2	6·1	6·1[b]	Uruguay	5·8	5·8[b]	60	20
21,018·5	...	1316·8		...	1229·0	80,997	12,184
29,138	...	1922·0	Grand Total	...	1741·9	116,228	21,421

Summary.

Area, Square Miles.		Total Trade, including Imports and Exports.	Trade.		
Thousands.	Per cent.		Millions. £	Per cent. to Total. No.	Per sq. mile. £
8120	27·86	British Empire	1118·1	30·51	137·6
21,018	72·14	Principal Foreign Countries	2545·8	69·49	121·1
29,138	100·00		3663·9	100·00	125·7

* Information not available.

[d] Figures for 1882. [a] Embracing all vessels above small coasting craft of small tonnage. [b] Home consumption or domestic products only. [c] Figures for 1885. [d] Figures for 1883.

RAILWAYS IN TASMANIA.

Launceston and Western Railway (Government Line). Length, 45 Miles; originally 5ft. 3in. Gauge, now altered to 3ft. 6in.

The sod of the first railway in Tasmania, connecting Launceston with Deloraine, was turned by His Royal Highness the Duke of Edinburgh in the year 1868, and three years after, on the 10th February, 1871, the line was opened for traffic. This line was originally projected by a private Company (The Launceston and Western Railway Com-

pany). Only one-ninth of the original capital, however, (£50,000), was subscribed by the shareholders, the remainder of the capital (£400,000) having been raised by the Government, on the condition that the interest thereon would be paid, as a first charge, out of the profits of the undertaking, or, failing that, by a levy of a special rate upon the real property of the Railway District, which had previously been assented to by a poll of the ratepayers. Although the line passed through the finest tract of agricultural land in the Colony, the traffic receipts during the first two years barely covered working expenses, and the Company being involved in financial difficulties, it was arranged to transfer the line to the Government upon certain terms. This transfer was effected on the 3rd August, 1872, from which time it has been successfully worked by the Government.

Tasmanian Main Line Railway (Company). Length, 122 *Miles; Gauge, 3ft. 6in. (Single Line).*

Although agitation long existed for the construction of a line of railway between the two principal centres, Hobart and Launceston, and although Parliament granted a vote of £5000 for a survey so far back as the year 1863, it was not until the year 1870 that the Government entered into an agreement with Mr. Audley Coote—who represented an English Company—giving it the right to construct a line between Hobart and Launceston, or between Hobart and Evandale Junction with running powers over the Launceston and Western Railway to Launceston, the Government guaranteeing 5 per cent. on capital expended during construction, and a profit of £32,500 per annum for 30 years from the day of opening.

The construction of the line was soon after commenced, and the Government laid down a third rail for the 3ft. 6in. gauge upon the Launceston and Western Railway, the Tasmanian Main Line Railway Company having previously obtained running powers over that part of the line to Launceston. Although train service was carried on by the contractors between Hobart and the Evandale Junction from March, 1876, the line was not formally acknowledged as open for traffic by the Company until 1st November, 1876, from which time the line has been continuously worked by the Tasmanian Main Line Railway Company up to October, 1890, when it was purchased by the Government for the sum of £1,106,500.

Emu Bay and Mount Bischoff Railway (Company). Length, 48 *Miles; Gauge, 3ft. 6in. (Single Line).*

This line, originally worked as a horse-tramway, was converted into a 3ft. 6in. gauge railway, and opened for traffic between the Mount Bischoff Tin Mines and the port at Emu Bay in the year 1884. It is entirely a private undertaking, receiving no direct aid from the State, further than a right to levy somewhat higher rates for freight than are usually obtained on other railways.

Progress of Tasmanian Railway Construction.

The following summary shows the progress of railway construction since the beginning :—

		Miles.	Opened for traffic.
1. G.	Launceston and Western, Launceston to Deloraine...	45	10 Feb., 1871
2. C.	Tasmanian Main Line Railway, Hobart to Evandale Junction, with running powers to Launceston	122	1 Nov., 1876
3. C.	Emu Bay and Mount Bischoff, Emu Bay to Waratah	48	14 July, 1884
4. G.	Oatlands Branch, Parattah to Oatlands	4½	13 May, 1885
5. G.	Mersey Extension, Deloraine to Formby	37	30 May, 1885
6. G.	Fingal Branch, Corners to Avoca	46	29 June, 1886
7. G.	Derwent Valley Branch, Bridgewater to New Norfolk	15	1 Sept., 1887
8. G.	Extension, ditto, New Norfolk to Glenora	9½	27 July, 1888
9. G.	Scottsdale Line, Launceston to Scottsdale.....	47	9 Aug., 1889
Total to August, 1889	Government.....	204	
	Companies	170	
		374	

G. indicates Government Railways. C. indicates Companies' Railways.

Beside these there are several other branches or extensions of the Government lines authorised and being constructed; viz.—

Green Ponds Branch—Brighton to Apsley	27 miles
Sorell Railway—Bellerive to Sorell.....	15 „
Zeehan Railway	29 „
TOTAL.....	71 „

These, apart from other lines for which surveys have been made, make up a length of 470 miles of railway,—equivalent to 168 miles of line for every 1000 square miles of territory; 317 miles for every 100,000 persons; or 321 persons to each mile of railway. Taking the size of the Colony into consideration, the progress made in opening up the country compares favourably with the larger sister colonies, where railways were established much earlier.

Progress of Railways in Australasian Colonies compared.

The following summary shows that, in relation to area—the true mode of comparison,—Tasmania ranks third among the Australasian group in the development of her railway system :—

	Miles of Railway.	Miles of Railway open or being constructed.		Persons to each mile of Railway.
	No.	Per 10,000 square miles.	Per 100,000 persons.	
1. Victoria 1889	2883	329	262	386
2. New Zealand 1889	2035	195	331	305
3. Tasmania..... 1889	470	180	317	321
4. New South Wales . 1889	2252	72	222	498
5. Queensland 1889	2635	39	664	154
6. South Australia 1889	1844	28	453	221
7. Western Australia. 1889	813	7	1888	54
Australasia 1889	12,932	41	342	292

RAILWAYS in various Countries, in the order of those showing the largest development of Railways in relation to Area.

Among densely populated Countries of Europe—

	Miles of Railway per 10,000 square miles.
1. Belgium	2429
2. United Kingdom	1636
3. Netherlands	1291
4. Switzerland	1210
5. German Empire	1163
6. France	1073
7. Denmark	825
8. Malta	756
9. Italy	708
10. Austria and Hungary	629
11. Portugal	344
12. Spain	303
13. Roumania	291
14. Sweden and Norway	191
15. Servia	180
16. Greece	149
17. Russia	92

Ex-European Countries—

	Miles of Railway per 10,000 square miles.
1. Barbados	1446
2. Mauritius	1305
3. Egypt	1014
4. United States	526
5. Victoria	329
6. Trinidad	308
7. New Zealand	195
8. Tasmania	180
9. India	176
10. Jamaica	160
11. Brazil	155
12. Natal	125
13. Cape of Good Hope	75
14. New South Wales	72
15. Ceylon	71
16. Chili	57
17. Mexico	52
18. Uruguay	47
19. Queensland	39
20. Argentine Republic	37
21. Canada	36
21. Japan	36
22. Peru	35
23. South Australia	28
24. Newfoundland	27
25. Western Australia	8
26. Turkey	7
27. British Guiana	2

Thus it would appear that Belgium takes first rank among all countries as having the largest number of miles of railway (2429) in relation to area, the United Kingdom coming next with 1636 miles of railway per 10,000 square miles.

Among 28 ex-European countries Barbados takes the highest rank, with 1446 miles per 10,000 square miles. In the first ten of this group it is locally interesting to observe that three Australasian Colonies are included—viz., Victoria, New Zealand, and Tasmania—taking 5th, 7th, and 8th rank respectively.

DEVELOPMENT of the Railways of the World,* 1830 to 1886-7.

	Miles open.
1830	206
1840	5339
1850	23,628
1860	66,420
1870	137,940
1880	221,870
1886-9	344,821

* Figures from 1830 to 1880 computed from comparative table in *Kilometres* given in *Almanach de Gotha*, p. 1083, year 1884.

Railways of the World, arranged in the Order of their importance.

In British Possessions.

Country.	Miles open or being constructed. No.	Miles open or being constructed. Per 10,000 sq. miles.	Persons per mile of rail.
1887-9.			
United Kingdom	19,812	1636	1890
India	15,245	176	13,644
Australasia (Total)	12,935	41	292
Canada	12,163	36	407
Victoria	2883	329	386
Queensland	2635	39	154
New South Wales	2252	72	498
New Zealand	2035	195	305
South Australia	1844	28	221
Cape of Good Hope	1599	75	861
Western Australia	813	7	54
Tasmania	473	180	321
Natal	234	125	2057
Ceylon	181	71	15,505
Newfoundland	115	27	1679
Mauritius	92	1305	4014
Jamaica	67	160	9155
Trinidad	54	308	3388
Barbados	24	1446	7542
British Guiana	21	2	12,857
Malta	9	756	17,889
	62,551	77	—

In Principal Foreign Countries.

Country.	Miles open or being constructed. No.	Miles open or being constructed. Per 10,000 sq. mls.
1886-8.		
United States	154,276	526
France	29,683	1455
German Empire	24,270	1163
Russia-in-Europe	17,313	92
Austria-Hungary	15,104	629
Italy	7830	708
Spain	5929	303
Sweden and Norway	5644	191
Brazil	4955	155
Argentine Republic	4216	37
Mexico	3849	52
Belgium	2762	2429
Switzerland	1869	1210
Chili	1649	57
Peru	1625	35
Netherlands	1616	1291
Roumania	1460	291
Denmark	1217	825
Portugal	1188	344
Egypt	1115	1014
Turkey	904	7
Japan	534	36
Greece	371	149
Servia	339	180
Uruguay	337	47
Total Foreign Countries	290,055	138
Summary.		
Total Principal Foreign Countries	290,055	138
Total British Possessions	62,551	77
All Countries	352,606	121

A more vivid conception of the extent of the principal railways of the world may be gained by contrasting their respective lengths with the mean circumference or diameter of the globe; thus :—

The Railways of the World		would girdle the earth		14·20	times.
,, ,,	United States	,,	,,	6·21	,,
,, ,,	British Possessions	,,	,,	2·52	,,
,, ,,	France	,,	,,	1·20	,,
,, ,,	Germany represents the diameter of the earth			3·07	,,
,, ,,	United Kingdom	,,	,,	2·51	,,
,, ,,	Russia	,,	,,	2·39	,,
,, ,,	India	,,	,,	1·93	,,
,, ,,	Austria-Hungary	,,	,,	1·91	,,
,, ,,	Australasia	,,	,,	1·64	,,
,, ,,	Canada	,,	,,	1·54	,,

Results of the Working of Tasmanian Railways.

A full analysis of the working of Tasmanian Railways is given in the eight tables following. It is difficult to gauge the financial prospects of the various Government lines, as new extensions into fresh districts have the immediate effect of concealing the true progress of the portions which had been constructed first, but had barely time to reveal local progress arising out of the new industries being developed. Naturally, the earlier portions were constructed within the more densely centred Districts. The later extensions are projected into more and more thinly peopled districts, and the effect upon receipts for a time must be the arrest or decline of average receipts *per mile open* and *per train mile*, even although the aggregates show a steady increase throughout. This effect is well exemplified by reference to the development of the Government Railways for different years.

GOVERNMENT RAILWAYS.—Receipts.

Year.	Miles Open.	Gross.	Net.	Per Mile.	Per Train Mile.	Per cent. Profit relative to Capital expended.	Per cent. Working Expenses to Receipts.
	No.	£	£	£	*s.* *d.*		
1873.....	45	17,093	3441	379·9	4 1	0·81	79·9
1878.....	45	22,190	4509	493·0	4 4·3	1·03	79·7
1882.....	45	27,686	9878	615·0	5 4·7	2·26	64·4
1888.....	157½	59,890	2591	391·9	3 4·6	0·22	95·7
1889.....	204½	75,925	18,094	431·2	3 9·8	1·16	76·1

Cost of Working.

The inverse of the preceding conclusions ought to be expected as regards cost of working; for as lines are projected into more thinly peopled districts the *train service per mile open* ought to be smaller, and the relative cost *per train mile* and *per mile* less. It is obvious that fixed charges, such as management and station agencies, should relatively decrease, with a corresponding increase in the absolute number of train miles run; thus—

GOVERNMENT RAILWAYS.—Cost of Working.

	Miles Open.	Total Amount.	Per Mile.	Per Train Mile.	Train Miles.	
					Total.	Per Mile.
	No.	£	£	*s.* *d.*		
1873.....	45	13,652	303·3	3 3·1	83,682	2260
1878.....	45	17,681	342·2	3 5·7	101,712	2260
1882.....	45	17,808	341·5	3 5·6	102,739	2283
1888.....	157½	57,279	375·0	3 2·9	353,515	2313
1889.....	204½	57,831	328·5	2 10·9	397,354	2257

This comparative statement proves the correctness of the conclusions arrived at.

EXTENT of Train Service provided relative to Mileage and Traffic Receipts on Australasian Lines.

Train Service.	Train Miles per Mile per Year.	Trains per Mile per Day.	Trains per Mile per £1000 Receipts.	Cost of Working per Mile Open.	Receipts per Mile Open.	Per cent. Net Receipts to Capital.
1. Victoria, 1889.....	4858	15·52	10·97	885	1415	4·01
2. New South Wales, 1889...	3459	11·05	9·45	753	1169	3·03
3. Tasmania, 1889	2358	7·53	14·95	440	504	0·76
4. Western Australia, 1889..	2037	6·51	29·99	289	217	−1·55
5. South Australia, 1889	1756	5·61	10·63	296	528	3·73
6. New Zealand, 1889	1604	5·12	8·36	372	612	3·11
7. Queensland, 1889	1757	5·61	14·54	288	386	1·51
Total Australasia...	2676	8·63	11·20	510	796	3·08

Of the £28,170,121 Revenue, expenditure for the seven colonies of Australasia in 1889 £9,814,630, or 34·84 per cent., is absorbed by the interest and working expenses of Railways alone. (Working expenses, £5,614,952; interest on Railway construction, £4,199,678.) The total Revenue for the Railways amount to £8,828,146, exceeding working expenses by £3,213,194, but falling short of working and interest expenses by £986,484, or a deficiency on the whole of 10·05 per cent.

Profit on working Railways largely depends upon economy in the train service provided. The relative amount of profit from the working of the various Railways does not always depend upon the richness of traffic and traffic receipts. A great deal depends upon the method of working the Railways under varying conditions, as in densely or thinly populated localities.

This is significantly illustrated by contrasting the results of working the Railway systems of South Australia and New South Wales; the former, with only a traffic yielding £528 per mile, or less than a half of the latter, is yet able to show a higher net profit (viz., 3·73 per cent., as against 3·03 per cent.), owing mainly to the wise economy with which they limit and determine the train service in accordance with the varying resources of the districts through which the particular railway system passes. Queensland and New Zealand also, with good results from a financial point of view, follow a similar economical course in the way in which they accommodate the train service to the varying needs of districts in varying stages of development. The latter Colony (New Zealand) only earns about half the receipts *per mile* of New South Wales Railways, yet, by carefully limiting its train service—equivalent to 5·12 trains per mile per day—it is enabled to serve the needs of the Colony satisfactorily, if not luxuriously, at a cost of only £372 *per mile worked*, and is, therefore, able to show a higher net profit (3·11 per cent. to 3·03) than the New South Wales Railways, notwithstanding the advantage which a richer traffic (£753 per mile) gives the latter Colony.

As an illustration of the importance of these considerations in relation to the finances of a young colony, it is noteworthy that, although the traffic receipts per mile upon the Main Line Railway of Tasmania

for 1889 were greater than the average receipts per mile upon New Zealand railways, the former, practically, yielded no profit on working owing to its train service being as much as 80·4 per cent. above the average afforded in New Zealand; while the latter, by its greater economy of train service, yielded a profit of £233·5 *per mile* worked, amounting to £422,401, or nearly 3 per cent. on cost of construction, for the year 1889,—equivalent to a saving in that Colony of 13*s.* 7*d.* per head of the population, or equivalent to a reduction of its Public Debt of £12,068,600, reckoning interest at 3½ per cent. There can be no doubt, therefore, that it would be of the greatest advantage to the finances of the young thinly populated colonies if the admirable methods of working railways in Queensland, South Australia, and New Zealand were followed more closely in the extension of railway systems into the more thinly populated districts; and, indeed, it is satisfactory to note that in the mode of working the later extensions in Tasmania (Scottsdale and Fingal lines) the present very able Manager, Mr. Back, has already given indication that this very desirable course of economy in working will be closely followed in all new extensions into districts of a similar character as regards traffic and population. From the analysis of the preceding table it is clear, from a national and financial point of view, that the usual references to *cost per mile* or *per train mile* of themselves afford no reliable index to the economy of working railways. These indices are only of value when conjoined with the standards of economy as regards *Train Service per mile per day*, and *Train Service per* £1000 *Traffic Receipts.*

For Railways in thinly populated districts where the traffic is small (say yielding under £400 per mile per year), the average train miles, reckoned on number of through-trains per day, is the most reliable test of economical working. For lines yielding more than £400 per mile per year, the best test of economy would be its measure above or below the standard of 11·20 *trains* per £1000 traffic receipts per mile, which last is the average for Australasian Railways as a whole for the year 1889.

Tasmanian Railways.

Government Railways—Traffic Receipts, &c. 1873 to 1889.

Year.	Miles open.	Cost of Construction and Equipment.		Total Train Miles.	Locomotives.	Goods and Passenger Traffic.		Receipts.					Receipts per Train Mile.	
		Amount.	Per mile.			Tons.	Passengers.	Passengers.	Parcels, &c.	Goods and Live Stock.	Miscellaneous.	Total.		
		£	£		No.			£	£	£	£	£	s.	d.
1873	45	426,279	9472	83,682	4	25,283	82,923	7659	433	7969	1032	17,093	4	1·02
1874	45	427,946	9509	94,110	5	24,804	91,264	8919	515	7496	1395	18,325	3	10·7
1875	45	429,604	9547	89,650	5	25,837	92,122	9132	572	8691	1041	19,436	4	4·8
1876	45	431,613	9591	89,101	5	20,630	103.017	9138	698	6788	1590	18,914	4	2·9
1877	45	433,409	9631	102,471	5	18,516	102,959	9899	572	6804	4167	21,443	4	2·2
1878	45	435,445	9676	101,712	5	17,421	106,472	10,251	675	6448	4816	22,190	4	4·3
1879	45	435,595	9679	100,624	5	16,363	103,256	10,083	769	5686	5046	21,584	4	3·4
1880	45	435,595	9679	104,473	5	20,762	102,918	10,118	759	7332	5351	23,560	4	6·1
1881	45	437,015	9711	101,934	5	21,043	102,495	10,396	791	7547	5346	24,074	4	8·7
1882	45	439,383	9764	102,739	5	24,966	111,271	11,973	921	9267	5525	27,686	5	4·7
1883	45	445,322	9896	107,466	5	25,528	123,441	13,103	1035	9683	5701	29,522	5	5·9
1884	45	465,494	10,344	108,175	5	22,862	132,482	13,673	1098	8575	5729	29,075	5	4·5
1885	86½	668,263	7726	164,575	10	29,329	158,723	17,139	1409	10,896	6975	36,419	4	5·1
1886	133	872,332	6558	224,143	17	42,661	193,829	22,456	1721	15,052	6695	45,924	4	1·1
1887	148	976,957	6601	295,432	23	68,113	246,265	26,411	1831	18,026	7686	53,954	3	7·8
1888	157½	1,165,269	7398	353,515	21	84,080	282,436	29,388	2130	19,675	8698	59,891	3	4·6
1889	204½	1,549,848	7578	397,354	25	110,949	316,498	34,058	2626	27,703	11,539	75,926	3	9·8

Government Railways.

Working Expenses, 1873 to 1889.

Year.	Miles worked.	Maintenance.			Locomotive and Carriage and Wagon Charges.			Traffic Charges.			General Charges, Mails, &c.			Total Working Charges.			Working Days.
		Amount.	Per Mile open.	Per Train Mile.	Amount.	Per Mile open.	Per Train Mile.	Amount.	Per Mile open.	Per Train Mile.	Amount.	Per Mile open.	Per Train Mile.	Amount.	Per Mile open.	Per Train Mile.	
		£	£	s. d.	£	£	s. d.	£	£	s. d.	£	£	s. d.	£	£	s. d.	
1873...	45	3400	75·5	0 9·7	4559	101·3	1 1·1	4238	94·1	1 0·1	1455	32·4	0 4·1	13,652	303·3	3 3·1	313
1874...	45	4791	106·4	1 0·2	5285	117·6	1 1·5	4231	94·0	0 10·7	1321	29·3	0 3·4	15,628	347·3	3 3·8	313
1875...	45	4863	101·8	1 1·2	5085	113·0	1 1·8	4781	106·2	1 1·0	1484	33·0	0 4·0	16,213	360·3	3 8·0	313
1876...	45	4650	103·3	1 0·5	5032	111·8	1 1·5	4666	103·7	1 0·5	1434	31·9	0 3·9	15,782	350·7	3 6·4	313
1877...	45	5960	132·4	1 1·1	5657	125·7	1 3·1	4884	108·5	0 10·7	1602	35·6	0 3·5	18,103	402·2	3 6·4	313
1878...	45	5342	97·2	0 11·7	5662	125·8	1 3·4	4806	85·8	0 10·5	1871	33·4	0 4·1	17,681	342·2	3 5·7	312
1879...	45	6550	118·7	1 2·5	5681	126·2	1 3·7	4720	84·3	0 10·5	1748	31·2	0 3·9	18,699	360·4	3 8·6	313
1880...	45	5554	99·2	0 11·9	5248	116·6	1 1·9	4976	88·9	0 10·7	1678	30·0	0 3·6	17,456	334·7	3 4·1	314
1881...	45	5727	102·3	1 0·6	5206	115·7	1 2·2	4822	86·1	0 11·6	1956	34·9	0 4·3	17,711	339·0	3 5·7	313
1882...	45	5688	101·6	1 0·6	5376	119·5	1 2·7	5041	90·0	0 11·2	1703	30·4	0 3·1	17,808	341·5	3 5·6	312
1883...	45	9188	164·1	1 7·4	5932	131·8	1 3·3	5681	101·4	1 0·0	1767	31·6	0 3·7	22,568	428·9	4 2·4	313
1884...	45	7547	134·7	1 3·7	5731	127·3	1 2·7	5451	97·3	0 11·4	1824	32·5	0 3·8	20,553	391·8	3 9·6	314
1885...	86½	10,697	132·7	1 2·8	11,929	162.3	1 6·0	7014	87·0	0 9·7	2054	25·5	0 2·8	31,064	407·5	3 9·3	313
1886...	133	15,308	144·4	1 3·9	11,863	111·9	1 1·6	8506	80·2	0 8·8	2241	21·1	0 2·3	37,918	357·6	3 4·6	313
1887...	148	21,944	159·0	1 5·3	15,136	109·7	1 1·2	9663	70·0	0 7·6	2865	20·7	0 2·2	49,608	359·4	3 4·3	313
1888...	157½	24,293	159·0	1 4·3	19,033	124·6	1 1·6	11,008	72·0	0 7·1	2965	19·4	0 1·9	57,299	375·0	3 2·9	313
1889...	204½	24,409	138·6	1 2·8	18,072	102·7	0 10·9	11,923	67·8	0 7·2	3429	19·4	0 2·0	57,832	328·5	2 10·9	313

GOVERNMENT RAILWAYS.

SUMMARY for Five Years ending 31st December, 1889.

		1885.	1886.	1887.	1888.	1889.
Miles open	No.	86½	133	148	157½	204½
Total cost of construction and equipment	£	668,263	872,332	976,957	1,165,269	1,549,848
Ditto ditto per mile	£	7726	6558	6601	7398	7578
Gross earnings	£	36,419	45,924	53,954	59,890	75,925
Working expenses	£	31,064	37,917	49,608	57,279	57,831
Profit on working	£	5355	8007	4346	2591	18,094
Proportion of working expenses to gross earnings	Per cent.	85·29	82·56	91·94	95·67	76·16
Profit on working per £100 capital expenditure	,,	0·80	0·91	0·44	0·22	1·16
Passenger journeys	No.	158,723	193,829	246,265	282,436	316,498
Average distance travelled per passenger	Miles.	18·62	20·47	20·52	20·49	22·32
Average rate per passenger	*s. d.*	2 1·91	2 3·80	2 1·74	2 0·97	2 1·82
Ditto per passenger per mile	Pence.	1·39	1·36	1·25	1·21	1·15
Goods tonnage	No.	29,329	42,661	68,113	84,080	110,949
Average distance travelled per ton	Miles.	29·38	28·77	30·64	33·21	32·01
Average rate per ton	*s. d.*	6 7·71	6 5·45	4 11·09	4 5·29	4 8·80
Ditto per ton per mile	Pence.	2·71	2·69	1·93	1·60	1·77
Train mileage	No.	164,575	224,143	295,432	353,515	397,354
Average ditto per mile open	No.	2365	2114	2141	2313	2257
Engine mileage	No.	196,155	246,269	334,958	409,306	477,250
Gross earnings per train mile	*s. d.*	4 5·1	4 1·1	3 7·8	3 4·65	3 9·85
Ditto per mile worked	£	523·3	433·2	390·9	391·97	431·29
Working expenses per train mile	*s. d.*	3 9·3	3 4·6	3 4·3	3 2·9	2 10·9
Ditto per mile worked	£	407·5	357·6	359·4	375·0	328·5
Locomotives	No.	10	17	23	21	25
Other vehicles	No.	224	392	542	555	567

Working of the Tasmanian Main Line Railway.

The following summary, selecting five yearly intervals, reveals the progress made in working this railway since the year 1879 :—

	1879.	1883.	1888.	1889.
Miles open ..... No.	122	122	122	122
Miles worked..... No.	133	133	133	133
Gross receipts ..... £	49,727	69,010	76,094	81,658
Working expenses ..... £	52,747	68,973	71,565	81,588
Profit ..... £	...	37	4529	70
Loss ..... £	3020	...	...	...
Receipts—				
Per mile..... £	373·8	518·9	572·1	613·9
Per train mile ..... *s. d.*	3 4·8	4 5·7	3 10·8	4 2·9
Expenses per mile ..... £	396·6	518·6	538·0	613·4
Ditto per train mile ..... *s. d.*	3 7·3	4 5·7	3 8·0	4 2·8
Receipts per passenger per mile *s. d.*	6 3·7	3 1·6	2 2·8	2 3·7
Train miles per mile ..... No.	2197	2318	2934	2894
Profit per cent. to capital outlay.....	...	0·03	0·38	0·01
Working cost per cent. to receipts...	...	...	94·6	99·9

During the eleven years receipts have increased by £31,931, or 64·2 per cent., and the latter year shows a profit on working of £70, or 0·01 per cent. on capital outlay, as contrasted with a positive loss on working of £3020 in the year 1879. The reason why the profit has not more markedly increased in correspondence with receipts is due to the fact that the gain in receipts is counterbalanced in the latter years by extra service rendered for the sake of short-journey traffic, as shown by the lowered value of the fare per passenger, and by the train service *per mile* having increased nearly 31 per cent., the expenses thus absorbing the greater part of the improvement in revenue.

TASMANIAN MAIN LINE RAILWAY COMPANY (LIMITED).—Comparative Statement of Receipts and Working Expenses, 1876 to 1889.

Receipts.

Period.	Passengers.	Parcels, &c.	Goods and Live Stock.	Mails.	Telegrams, Rents, &c.	TOTAL.	Per Train Mile.
	£	£	£	£	£	£	*s. d.*
Year 1876.....	10,414	663	7417	—	42	18,536	—
1877	23,775	1999	11,317	1343	309	38,743	3 2·71
1878	26,197	2453	14,442	2587	415	46,094	3 5·62
1879	28,429	2469	15,571	2873	385	49,727	3 4·83
1880	28,193	2635	15,971	2873	508	50,180	3 4·62
1881	32,503	3037	15,530	3083	640	54,793	3 7·86
1882	35,866	3327	17,467	2873	795	60,328	3 11·90
1883	41,075	3674	20,418	2963	880	69,010	4 5·72
1884	38,040	3708	23,174	3450	955	69,327	4 2·82
1885	40,287	3918	25,195	3100	1207	73,707	4 4·41
1886	38,922	3452	22,583	3000	991	68,948	4 2·11
1887	35,835	3368	25,643	3000	1194	69,040	3 9·12
1888	42,449	3513	26,138	3300	694	76,094	3 10·80
1889	45,107	3519	27,780	3300	1952	81,658	4 2·92

TASMANIAN MAIN LINE RAILWAY COMPANY (LIMITED).—Comparative Statement of Receipts and Working Expenses, 1876 to 1889—*continued.*

Working Expenses.

Period.	Maintenance.	Locomotive and Carriage and Wagon Department.	Traffic Expenses.	General Charges, London and Tasmania.	Miscellaneous Expenses.	TOTAL.	Per Train Mile.
	£	£	£	£	£	£	*s. d.*
Year 1876.....	12,199	6952	3587	5117	982	28,837	—
1877	18,078	15,238	6238	6628	4248	50,430	4 2·39
1878	21,119	15,922	6822	7032	4825	55,720	4 2·32
1879	17,124	16,669	7572	6878	4505	52,748	3 7·31
1880	17,008	15,273	7609	6552	4589	51,031	3 5·31
1881	19,591	16,274	7817	6103	4650	54,435	3 7·57
1882	21,677	17,907	8064	6050	4452	58,150	3 10·17
1883	21,645	26,098	9221	6441	5568	68,973	4 5·69
1884	17,778	28,185	9754	6755	5665	68,137	4 1·95
1885	26,440	24,350	10,418	7085	5253	73,546	4 4·30
1886	23,077	23,778	10,031	7096	4962	68,944	4 2·08
1887	20,014	24,422	10,528	7066	6169	68,199	3 8·57
1888	24,305	23,726	10,800	6945	5789	71,565	3 8·01
1889	21,983	29,263	11,750	10,922	7670	81,588	4 2·87

T.M.L. Railway.—Summary for Five-yearly period, 1885-89.

Particulars.	1885.	1886.	1887.	1888.	1889.
Miles open ..... No.	122	122	122	122	122
Miles worked ..... No.	133	133	133	133	133
Total cost of construction and equipment—Thousand £	1188	1188	1188	1188	1188
Passengers carried ..... No.	322,787	337,972	343,502	379,775	390,131
Average fare per passenger ..... *s. d.*	2 5·95	2 3·64	2 1·04	2 2·83	2 3·75
Goods and minerals conveyed ..... Tons	46,522	41,871	58,327	72,528	80,814
Average rate per ton ..... *s. d.*	9 7·19	9 4·78	7 11·86	4 4·09	6 4·04
Live stock conveyed ..... Trucks	1574	1713	1387	1270	1563
Average rate per truck ..... *s. d.*	36 5·18	33 11·29	33 10·1	29 0·61	27 10·16
Train miles run ..... No.	337,474	330,416	367,267	390,226	384,899
Average mileage per mile worked ..... No.	2537	2484	2761	2934	2894
Engine miles run ..... No.	367,954	354,674	401,487	433,796	415,122
Gross receipts ..... £	73,707	68,948	69,040	76,094	81,658
Working expenses ..... £	73,546	68,944	68,199	71,565	81,588
Profit on working ..... £	161	4	841	4529	70
Profit on working per £100 capital expenditure..... £	0·01	0·01	0·07	0·38	0·006
Loss on working ..... £	—	—	—	—	—
Gross Receipts per train mile..... *s. d.*	4 4·41	4 2·11	3 9·12	3 10·80	4 2·92
Ditto per mile worked ..... £	554·19	518·41	519·07	572·14	613·97
Working expenses per train mile ..... *s. d.*	4 4·30	4 2·08	3 8·57	3 8·01	4 2·87*
Ditto per mile worked..... £	552·98	518·38	512·77	538·08	613·44
Locomotives ..... No.	15	14	14	15	14
Number of carriages, wagons, &c. ..... No.	294	285	280	287	287

* Subject to correction upon receipt of London advices.

Working of the Emu Bay and Mount Bischoff Railway.

From a financial point of view, as an undertaking this line is worked with great success, having yielded during the five years of working an average annual profit of 4·96 per cent. on capital outlay.

This result with the small extent of traffic could not be attained were it not for a combination of peculiarly favourable local conditions, among which are the following :—

(1.) Low cost of construction and equipment, only averaging £3192 per mile.

(2.) Light traffic and a small train service ; the latter only representing 576 train miles per mile per year, and enabling the line to be worked at the very low cost of £194·67 per mile per year.

(3.) The advantage of the local conditions, securing the greater part of its freight for the whole distance of working, and the value of the goods carried—tin ore chiefly—permitting of a high rate of carriage—*e.g.*, £2 15*s.* 9*d.* per ton for a distance not exceeding 48 miles—averaging 10*s.* 0·48*d.* per train mile. If such rates were charged upon Government railways, securing a similar yield of receipts per train mile, the year 1889 would have shown a profit on working equal to £141,605, or 9·13 per cent. on capital outlay.

Emu Bay and Mount Bischoff Railway.—Summary for Years 1885-89.

Particulars.	1885.	1886.	1887.	1888.	1889.
Miles open ..... No.	48	48	48	48	48
Miles worked ..... No.	48	48	48	48	48
Total cost of construction and equipment ..... £	153,133	153,133	153,209	153,209*	187,198
Ditto, per mile ..... £	3192	3192	3192	3192	3900
Passengers carried ..... No.	4684	5092	6924	7691	9226
Average fare per passenger ..... *s. d.*	10 2·73	9 4·24	7 6·5	7 9·46	6 3·38
Goods and minerals conveyed ..... tons	4531	4694	4842	4561	4462
Average rate per ton ..... *s. d.*	59*s.* 2·88*d.*	57*s.* 5·2*d.*	54*s.* 11·15*d.*	58*s.* 2·53*d.*	55*s.* 9·70*d.*
Train miles run ..... No.	30,144	33,358	31,868	33,294	33,733
Average mileage per mile open ..... No.	628	695	664	693	703
Engine miles run ..... No.	30,375	33,628	32,198	34,172	34,135
Gross receipts ..... £	16,779 3 2	17,062 10 8	17,229 16 11	17,486 19 7	16,935 1 2
Working expenses ..... £	6573 12 2	7956 7 10	8526 11 0	10,913 6 11	12,752 14 1
Profit on working ..... £	10,205 11 0	9106 2 10	8703 5 11	6573 12 8	4182 7 1
Ditto per £100 capital expenditure ..... £	6·66	5·96	5·68	4·29	2·23
Gross receipts per train mile ..... *s. d.*	11 1·58	10 2·76	10 9·75	10 6·35	10 0·48
Ditto mile worked ..... £	349·56	355·47	358·95	364·31	352·81
Working expenses per train mile ..... *s. d.*	4 4·33	4 9·24	5 4·21	6 6·66	7 6·73
Ditto mile worked ..... £	136·95	165·75	177·63	227·35	265·68
Locomotives ..... No.	2	2	2	3	3
Number of carriages, wagons, &c. ..... No.	27	27	27	22	26

DON TRAMWAY.—Open to the General Public for Traffic.

Particulars.	1885.	1886.	1887.	1888.	1889.
Gauge ..... ft. in.	4 6	4 6	4 6	4 6	4 6
Miles open..... No.	13·5	13·5	11 5	11	11
Miles constructed..... No.	13·5	13·5	13 5	13	13
Cost of construction and equipment £	9356	9356	9356	9750	9838
Ditto per mile ..... £	693·04	693·04	693·04	886·36	894·3
Gross receipts ..... £	1994	1913	1197	1011	1333
Working expenses ..... £	1800	1958	1192	1330	1274
Receipts per train mile ..... *s. d.*	2 2·58	2 1·50	1 3·95	1 2·68	1 5·09
Ditto per mile opened..... £	147·70	141·70	104·87	91·91	121·18
Ditto per horse..... £	153·38	147·15	119·7	84·25	133·30
Working expenses per train mile *s. d.*	2 0·00	2 1·10	1 3·88	1 5·45	1 4·98
Ditto per mile open..... £	133·33	145·04	103·64	120·90	114·91
Ditto per horse ..... £	138·46	150·61	119·20	110·84	127·4
Ditto per £100 receipts ..... £	90·27	102·35	99·58	131·55	95·50
Profit on working ..... £	194	—45	5	—319	59
Ditto per £100 capital expended £	2·07	—·48	·05	—3·27	·59
Horses employed (Average) ..... No.	13	13	10	12	10
Men employed „ ..... No.	9	7	6	6	6
Carriages, wagons, &c. ..... No.	10	8	6	8	9
Train miles ..... No.	18,000[a]	18,000[a]	18,000[a]	18,000[a]	18,000[a]
Tons traffic carried ..... No.	7572	5160	3446	2319	3335
Passengers..... No.	[b]	[b]	[b]	[b]	[b]

[a] Estimated. [b] Passengers carried free; no record of number available.

ALL TASMANIAN RAILWAYS.—Summary for Five-yearly Period, 1885-89.

Particulars.	1885.	1886.	1887.	1888.	1889.
Miles open on 31st December ..... No.	257	303	318	327½	374½
Miles worked, average per year ..... No.	240	276	319	323	346
Total cost of construction and equipment ..... £	2,009,712	2,213,781	2,318,482	2,506,794	2,925,362
Ditto per mile ..... £	7819·89	7306·21	7290·82	7654·33	7010·31
Passenger journeys ..... No.	486,194	536,893	596,691	669,902	715,855
Ditto per 1000 train miles ..... No.	914	913	859	862	877
Ditto per miles worked ..... No.	1891	1771	1876	2046	2069
Average fare per passenger ..... *s. d.*	2 5·53	2 4·50	2 2·08	2 4·68	2 3·51
Goods and minerals tonnage ..... No.	80,381	89,226	131,282	161,169	196,225
Ditto per 1000 train miles ..... No.	165	153	188	245	240
Ditto per miles worked ..... No.	313	294	413	473	567
Average rate per ton ..... *s. d.*	11 3·19	10 6·21	8 1·5	6 11·23	6 6·59
Gross receipts ..... £	126,905	131,935	140,224	153,471	174,518
Working expenses ..... £	111,167	114,706	126,333	139,777	152,172
Profit on working ..... £	15,738	17,229	13,891	12,694	22,346
Ditto per £100 capital expenditure ..... £	0·78	0·77	0·60	0·50	0·76
Loss on working ..... £	—	—	—	—	—
Proportion of working expenses to £100 gross earnings	87·60	86·94	90·09	91·07	87·19
Train miles run ..... No.	532,193	587,917	694,567	777,035	815,986
Average mileage per mile worked ..... No.	2217	2130	2177	2406	2358
Receipts per train mile ..... *s. d.*	4 9·23	4 5·86	4 0·45	3 11·40	4 3·33
Ditto per mile worked ..... £	528·77	478·00	439·57	475·14	504·39
Working expenses per train mile ..... *s. d.*	4 2·13	3 10·82	3 7·65	3 7·17	3 8·75
Ditto per mile worked ..... £	463·19	415·60	396·03	432·74	439·80
Locomotives ..... No.	27	33	39	38	42
Carriages, wagons, &c. ..... No.	545	704	849	861	880

ALL TASMANIAN RAILWAYS.—Analysis showing the General Results from working the various Lines from 1871 to 1889.

	Miles open.	Receipts.	Working Expenses.	Train Miles per Mile.	Receipts.		Working Expenses.		Per Cent. Working Expenses to Receipts.	Per Cent. Net Earnings or Loss to Capital Expenditure
					Per Train Mile.	Per Mile.	Per Train Mile.	Per Mile.		
		£	£		s. d.	£	s. d.	£		
1871	45	12,629	12,038	1729	3 2·5	272·6	3 0·7	267·5	95·3	0·14
1872	45	13,636	13,786	1607	3 9·3	303·0	3 9·8	306·4	101·1	—0·03†
1873	45	17,093	13,652	1860	4 1·0	379·9	3 3·1	303·3	79·9	0·81
1874	45	18,325	15,630	2091	3 10·7	407·2	3 3·8	347·3	85·3	0·63
1875	45	19,436	16,213	1992	4 4·8	431·9	3 8·0	360·3	83·4	0·75
1876	167½*	37,450	44,619	...	...	...	...	...	119·1	—0·65
1877	167½	60,186	68,533	2046	3 6·2	359·3	4 0·0	*409·2	113·8	—0·76
1878	167½	68,284	73,401	2200	3 8·6	408·8	3 11·9	439·5	106·9	—0·47
1879	167½	71,311	71,447	2352	3 7·6	427·0	3 7·6	427·8	100·1	—0·06
1880	167½	73,740	68,487	2400	3 8·1	441·5	3 5·0	410·0	92·8	0·34
1881	167½	78,867	72,146	2406	3 11·1	472·2	3 7·0	432·0	91·4	0·41
1882	167½	88,014	75,980	2425	4 4·2	527·0	3 9·0	454·9	86·3	0·74
1883	167½	98,532	91,541	2482	4 8·9	588·3	4 4·8	546·5	92·3	0·42
1884	215½	114,768	95,005	2600	4 6·2	532·6	4 1·3	444·3	82·8	1·10
1885	257	126,905	111,167	2217	4 9·2	528·8	4 2·1	463·2	87·6	0·78
1886	303	131,935	114,706	2130	4 5·9	478·0	3 10·8	415·6	86·9	0·77
1887	318	140,224	126,250	2177	4 0·4	439·6	3 7·6	395·8	90·0	0·60
1888	327½	153,471	139,777	2406	3 11·4	475·1	3 7·1	432·7	91·0	0·50
1889	374½	174,518	152,172	2358	4 3·3	504·3	3 8·7	439·8	87·1	0·76

* 167½ miles only open a portion of the year.

† In last column — indicates p. c. loss. Where no sign occurs p. c. profit is indicated.

DETAILS of the Comparative Results of working the various Systems of Railways throughout Australasia for the Year 1889.

Railway.	Average Miles open worked.	Train Service.			Earnings.		Working Expenses.								Working Cost per cent. to receipts.	Profit per £100 Capital expended.
							Maintenance.			*Other Charges.*			*Total.*			
		Total Train Miles.	Average Trains per Day.	Average Trains per £1000 Receipts.	Per Mile open.	Per Train Mile.	Per Mile open.	Per Train Mile.	Per cent. to Total Cost.	Per Mile open.	Per Train Mile.	Per cent. to Total Cost.	Per Mile open.	Per Train Mile.		
	No.	No.	No.	No.	£	*d.*	£	*d.*	p.c.	£	*d.*	p.c.	£	*d.*	p.c.	p.c.
WORKING EXPENSES UNDER £250 PER MILE OPEN.																
1. South-Eastern Railway, South Australia	216	141,992	2·1	15·9	131·8	48·5	59	21·5	49·6	60	22	50·4	119	43·5	90·3	0·34
2. Cook Town ditto, Queensland	55	21,469	1·24	9	139·4	85·7	80·8	49·7	62	49·5	18·8	38	130·3	80	93·5	
3. Scottsdale ditto, Tasmania	18½	24,590	4·2	28·1	149·4	...	40·4	27·3	27·9	108·9	19·7	72·1	149·3	27	...	0·31
4. Bundaberg ditto, Queensland	66	74,871	3·6	11·9	302·9	64	87·7	18·5	45·9	103·2	21·5	54·1	190·9	40·5	63	
5. Central ditto, ditto	464	484,808	3·3	10·5	314·6	72·3	106·2	24·2	52·9	94·5	21·8	47·1	200·7	46	63·8	
6. Fingal ditto, Tasmania	46¾	66,310	4·5	19	236·1	...	116·8	19·8	57·5	86·2	14·6	42·5	203	34·4	85·9	0·76
7. Northern ditto, South Australia	634½	1,163,362	5·8	9·8	591·8	77·6	83	11·8	35·5	151	18·8	64·5	234	30·6	39·5	7·28
WORKING EXPENSES OVER £250 AND UNDER £300 PER MILE OPEN.																
8. Mount Bischoff ditto, Tasmania	48	33,733	2·2	6·2	352·8	129·5	122·9	42	46·3	142·8	48·7	53·7	265·7	90·7	...	2·23
9. Northern ditto, Queensland	260	390,664	4·8	9	538·9	86	122·2	19·5	45·9	143·9	23	54·1	266·1	42·5	49·4	
10. Mackay ditto, ditto	31	28,726	2·96	14·2	200·6	52	138·2	35·7	49·1	143	37	50·9	281·2	72·7	140·2	
11. Wanganui ditto, New Zealand	215	263,133	4	10·1	397	77·7	119·5	23·9	41·8	166·3	32·1	58·2	285·8	56·0	72	
12. Maryborough ditto, Queensland	148	384,648	8·3	16·7	497·7	46	124·8	11·5	43·7	169·5	15·8	56·3	294·3	27·3	59·1	
13. Auckland ditto, New Zealand	254	341,402	4·3	10·5	410·7	73	117·8	21	39·4	181·1	32·3	60·6	298·9	53·3	72·8	
WORKING EXPENSES OVER £300 AND UNDER £500 PER MILE OPEN.																
14. Derwent Valley ditto, Tasmania	24¼	54,423	7·2	23	312·5	...	132·3	14·2	42·3	180·3	18·2	57·7	312·6	33·4	100·3	
15. Parattah and Oatlands ditto, ditto	4½	11,193	7·4	23·4	314·8	...	112·3	10·8	35·4	192·5	19·6	64·6	314·8	30·4	100	
16. Picton ditto, New Zealand	18	21,100	3·7	9·6	387·3	79·3	134·7	27·6	42·5	181·8	37·2	57·5	316·5	64·8	81·7	

17. Whangarei ditto, ditto	7	9572	4·4	11·7	375·1	65·7	78	13·7	24·5	240·2	42·2	75·4	318·2	55·9	84·8	
18. South Western ditto, Queensland	824	1,824,267	7	13	537·6	58·3	134·5	14·5	41	193·4	21	59	327·9	35·5	61	
19. Government Railways (all), Tasmania	176	397,354	7·2	16·7	431·3	45·9	138·6	14·8	41·9	189·9	20·1	58·1	328·5	34·9	76·2	1·15
20. Ditto (all), South Australia	1453	3,053,135	6·7	11	610·5	69·8	95	11·6	28·9	234	27·2	71·1	329	38·8	55·6	4·03
21. Napier Railway, New Zealand	97	210,636	6·9	9·7	707·8	78·0	122·5	13·5	34·5	232·6	25·8	65·5	355·1	39·3	50·2	...
22. Southern ditto, South Australia	252½	576,519	7·3	11·9	448·6	47·4	103·	10·9	28·9	253	26·5	71·1	356	37·4	79·3	1·05
23. Government Railways (all), Queensland	1856	3,223,127	5·4	...	454·3	62·8	134·2	...	36·2	236·1	...	63·8	370·3	37·8	60·3	2·75
24. Ditto (all), New Zealand	1809	2,868,203	5·1	8·3	609·6	91·5	134·7	20·3	35·5	245·2	36·8	64·5	379·9	57·1	62·3	2·97
25. Hurunui Bluff Railway, ditto	1069	1,670,625	4·99	7·5	650·1	98·7	137·4	20·9	35·3	251·7	38·2	64·7	389·1	59·1	59·9	
26. Kawawa Railway, ditto	8	10,066	4·0	8·	501·1	84·5	102·7	19·6	26·1	291·5	55·6	73·9	394·0	75·2	78·6	
27. Nelson ditto, ditto	23	39,223	5·4	12·9	419·9	50·	183·5	25·8	44·1	232·3	32·7	55·9	415·8	58·5	99	
28. Cairns ditto, Queensland	8	13,674	5·5	6·7	815·9	114·5	76·2	10·7	44·2	352·7	49·6	55·8	428·9	60·3	52·6	
29. Western ditto, Tasmania	82	240,073	9·4	14·1	664·4	...	176·6	14·5	39·6	302·4	22·1	60·4	446·6	36·6	78·3	
WORKING EXPENSES OVER £500 AND UNDER £1000 PER MILE OPEN.																
30. Wellington ditto, New Zealand	91	233,658	8·2	10·1	806	75	139·5	13·0	26·6	384·6	35·9	73·4	524·1	48·9	65	
31. Main Line ditto, Tasmania	122 / 133	384,899	9·2	15	614·0	50·9	180·2	...	29·5	433·2	...	70·5	613·4	50·9	99·9	0·006
32. Northern ditto, Victoria	664½	2,603,294	12·5	11·7	1073·7	65·7	147·8	9·1	21·2	548·8	33·5	78·8	696·6	42·6	64·8	2·61
33. Western ditto, ditto	722	2,707,844	11·9	9.4	1207·3	77·3	172·9	11·1	24·1	544·9	35·7	75·8	716·8	46·8	60·5	3·89
34. Government Railways, N. S. Wales	2177	8,008,826	11·8	9·8	1209·5	78·9	203·0	13·2	26·5	562·2	36·7	73·5	765·2	49·9	63·3	3·28
35. West Port ditto, New Zealand	19	41,627	7·1	4·8	1491·6	163·3	307·3	33·7	39·8	463·5	50·7	60·2	770·8	84·4	51·7	
36. North-Eastern ditto, Victoria	427½	2,241,964	16·8	10·4	1620·9	74·2	181·2	9·2	21·6	658·2	33·3	78·4	839·4	42·5	57·2	6·03
37. Midland ditto, South Australia	230½	1,000,835	13·9	9·8	1417·2	78·6	165	9·1	19·5	679	37·5	80·5	844	46·6	59·5	4·91
38. Government ditto (all), Victoria	2143¾	10,680,743	15·9	10·9	1450·8	69·9	190·9	9·2	21·0	716·8	34·5	79	907·7	43·7	62·6	3·73
WORKING EXPENSES OVER £1000 PER MILE OPEN.																
39. Eastern ditto, Victoria	313⅓	2,107,573	21·5	16·8	1284·8	45·9	233·0	8·3	21·4	858·2	30·6	78·6	1091·2	38·9	84·9	1·66
40. Greymouth ditto, New Zealand	8	27,161	11·3	3·6	3135·7	221·5	350·8	24·8	16·7	1742·6	123·2	83·3	2093·4	148·	66·8	
41. South Suburban ditto, Victoria	16½	1,020,068	245	9·4	26,032	101·1	1441·5	5·8	10·9	11698·2	45·2	89·1	13139·7	51·0	50·5	10·38
All Australasia	10,995	29,422,549	8·63	11·20	795·7	71·4	...	...	...	...	...	...	510·0	45·7	64·1	3·08

Comparative Results of the Working of Australasian Railways—1885—1889.

The following table shows the results of working the railways in Australasia from 1885 to 1889.

The general results are similar to those shown in the working of local railways; that is, as extensions are made year by year into thinly populated districts, the broad tendency at first is shown in a decline of receipts and working expenses *per mile*, a decline of net receipts relative to cost of construction, and an increase of working expenses relative to receipts; thus generally—

1. Mileage in 1885, 7990; increased to 11,040 in 1889.
2. Receipts per mile in 1885, £863; decreased to £796 in 1889.
3. Working expenses per mile in 1885, £552·7; decreased to £510·2 in 1889.
4. Profit per cent. to cost of construction in 1885, 3·14; decreased to 3·08 in 1889.
5. Train service per mile in 1885, 2753; decreased to 2676 in 1889.

Comparative Results of the Working of Australasian Railways—1885–1889.

	Miles Open.	Cost of Construction per Mile.	Train Miles.		Trains per Day per Mile.*	Receipts.		Working Expenses.		Percentage.	
			Per Mile Rail.	Per 100 Sq. Miles.		Per Mile.	Per Train Mile.	Per Mile.	Per Train Mile.	Profit to Cost of Construction.	Working Expenses to Receipts.
Victoria.	No.	£	No.	No.	No.	£	*d.*	£	*d.*		
1885.....	1680	13,235	4077	7794	—	1298·8	76·5	760·4	44·8	4·07	58·6
1886.....	1753	13,636	4140	8257	—	1328·7	77·0	747·6	43·3	4·26	56·3
1887.....	1949	12,980	4100	9093	—	1258·6	73·7	732·2	42·9	4·06	58·2
1888.....	2018	13,512	4499	10,334	14·3	1365·7	72·8	868·7	46·3	3·68	70·9
1889.....	2199	13,210	4858	12,153	15·5	1414·6	69·8	885·0	43·7	4·01	62·5
New South Wales.											
1885.....	1778	14,044	3735	2137	—	1223·3	78·6	820·3	52·7	2·87	67·1
1886.....	1890	14,474	3428	2085	—	1142·9	80·0	789·9	55·3	2·44	69·1
1887.....	2081	12,760	3110	2083	—	1061·2	81·9	700·5	54·1	2·83	66·0
1888.....	2206	12,072	3325	2361	10·6	1137·6	72·2	715·6	51·7	3·49	62·9
1889.....	2252	13,409	3459	2507	11·0	1169·2	76·8	753·4	51·4	3·03	64·3
Queensland.											
1885.....	1434	6614	1827	392	—	482·3	63·4	309·7	40·7	2·68	64·2
1886.....	1555	6892	1713	398	—	412·1	57·8	306·7	43·0	1·53	74·4
1887.....	1765	6906	1578	447	—	407·5	61·9	302·8	46·0	1·52	74·3
1888.....	1931	6766	1669	482	5·3	402·3	57·8	263·1	37·8	2·06	65·4
1889.....	2064	6459	1757	543	5·6	385·8	52·7	288·1	39·3	1·51	74·6
South Australia.											
1885.....	1063	6861	1803	212	—	605·6	80·6	383·0	51·0	3·24	63·3
1886.....	1382	6041	1679	216	—	477·7	68·3	309·4	44·2	2·34	64·8
1887.....	1420	6452	1813	262	—	526·6	69·7	307·7	40·7	3·12	58·4
1888.....	1500	6444	2005	331	6·4	635·0	76·0	303·6	36·3	5·12	47·8
1889.....	1543	6218	1756	341	5·6	528·3	72·2	296·1	40·4	3·73	56·04
Western Australia.											
1885.....	124	3523	1642	19	—	219·2	34·4	227·3	33·6	−9·25	103·7
1886.....	154	4569	1678	24	—	233·1	33·3	268·8	38·4	−0·77	115·3
1887.....	171	4514	2099	32	—	252·7	28·9	296·4	33·9	−0·91	117·3
1888.....	204	4373	1913	33	6·1	204·2	25·6	234·5	29·4	−0·64	114·8
1889.....	497	4271	2037	36	6·5	217·2	25·6	289·0	34·0	−1·55	133·0
New Zealand.											
1885.....	1654	7466	1826	2893	—	633·3	83·2	417·4	54·9	2·89	65·9
1886.....	1721	7564	1742	2882	—	578·3	79·7	404·8	55·8	2·30	70·0
1887.....	1753	7617	1680	2831	—	567·5	81·1	392·1	56·0	2·30	69·1
1888.....	1777	7582	1573	2676	5·0	561·4	85·6	364·1	55·5	2·60	64·8
1889.....	1897	7718	2155	3913	6·8	611·8	68·1	372·2	41·4	3·11	60·8
Tasmania.											
1885.....	257	7820	2071	2030	—	528·8	57·2	463·2	50·1	0·78	87·6
1886.....	303	7306	2130	2243	—	478·0	53·9	415·6	46·8	0·77	86·9
1887.....	318	7291	2177	2650	—	439·6	48·5	395·8	43·6	0·60	90·0
1888.....	328	7654	2406	2964	7·7	475·1	47·4	434·0	43·3	0·53	91·3
1889.....	375	7811	2358	3113	7·5	504·3	51·3	439·8	44·7	0·76	87·1
Australasia.											
1885.....	7990	9859	2726	689	—	862·8	75·9	552·8	48·7	3·14	64·1
1886.....	8758	9849	2607	702	—	804·4	74·1	527·8	48·6	2·73	65·6
1887.....	9457	9479	2528	746	—	776·1	73·7	501·6	47·6	2·86	64·6
1888.....	9964	9384	2674	840	8·5	823·2	73·8	515·7	46·3	3·27	62·6
1889.....	10,827	9233	2676	930	8·5	795·7	71·39	510·0	45·7	3·08	64·1

* Per working day (313).

COMPARATIVE Results of working Railways in various Countries.

		Miles open.	Cost of Construction.		Receipts.		Working Expenses.		Percentage.	
			Amount. — 000's omitted.	Mile ail.	Per Mile.	Per Train Mile.	Per Mile.	Per Train Mile.	Profit.	Working Expenses to Receipts.
		No.	£	£	£	*d.*	£	*d.*		
Russia (Europe)	1887	16,774	...	...	1545	86·2	886	49·2	...	57·3
Norway (State)	1888	928	6480	6983	367	16·8	276	12·8	1·29	75·3
„ (Private)	„	42	592	14,095	1779	44·9	800	20·2	7·26	44·9
Sweden (State)	1887	1550	13,510	8716	667	50·0	473	35·4	2·22	72·3
„ (Private)	„	3029	14,344	4736	358	1·12	195	0·6	3·45	55·1
German Empire	1888	24,270	495,107	20,537	2249	77·3	1208	40·8	5·17	53·7
Holland (State)	1888	927	21,325	23,004	1241	40·9	697	19·6	...	56·6
„ (Private)	„	770	...	...	1404	39·9	800	23·8	...	54·8
Belgium (State)	„	1988	29,209	27,802	2651	55·0	1408	29·2	4·47	53·1
France (State)	1887	19,528	531,120	26,944	2143	75·4	1107	39·8	3·76	52·8
Switzerland	1888	1869	36,489	20,488	1774	78·5	946	41·9	3·8	53·2
Italy	1887	7197	121,583	16,894	1318	70·2	875	46·5	2·62	66·2
Austro-Hungary	1887	15,050	298,489	19,728	1438	74·7	807	41·9	3·06	56·1
United States	1888	154,276	1,951,958	12,654	1284	69·0	...	47·5	10·9	68·7
United Kingdom	„	19,812	864,695	43,650	3520	...	1905	...	4·6	52·0
England and Wales	„	13,982	714,036	51,068	4231	...	2317	...	4·2	52·0
Scotland	„	3097	114,120	36,849	2495	...	1241	...	3·6	48·0
Ireland	„	2733	36,539	13,370	1043	...	558	...	3·9	53·0
Denmark	„	1048	...	...	747	...	...	...	...	87·2

Maintenance of Roads.

The following is a statement showing the extent of the Roads maintained by the various Trusts and Boards throughout Tasmania, together with particulars relating to cost, and showing comparisons with the previous year; thus:—

	1888.			1889.		
	Road Trusts.	Main Road Boards.	Total.	Road Trusts.	Main Road Boards.	Total.
Mileage maintained * ..... No.	4573	749‡	5322	4978†	645‡	5623
Expenditure..... £	31,605	19,171	50,776	30,212	11,773	41,985
Cost of maintenance per mile £	6·67	25·59	9·54	6·09	18·25	7·46

* Partly estimated.
† Only 1959 miles of this macadamised,—the remainder formed only.
‡ The roads under Main Road Boards are for the most part macadamised.

From the above it will be seen that the cost of the roads has decreased £8791, or a decrease of £2·08 per mile as compared with the previous year.

The main roads are for the most part macadamised; but it is estimated that there are only 1959 miles of the cross and by-roads under the Trusts either gravelled or macadamised. This is the principal reason why the maintenance of the main roads on the average exceeds that of the cross and by-roads by £12·16 per mile,—the former averaging £18·25 per mile and the latter £6·09 per mile. The financial state of the various Trusts and Boards is dealt with more exhaustively in Chapter XII.

Post Office.

The following Comparative Abstract shows the rapid growth of the Business of the Postal Department since 1880 :—

		1889.	1888.	1880.	1889 compared with 1888. Increase.	1889 compared with 1888. Decrease.	1889 compared with 1880. Increase.
Business.							
Letters received and despatched	No.	4,703,334	4,625,731	2,682,329	77,603	...	2,021,005
Packets	No.	651,706	499,921	149,967	151,785	...	501,739
Post Cards	No.	110,905	90,513	...	20,392	...	110,905
Newspapers	No.	5,424,657	4,319,394	2,195,733	1,105,263	...	3,228,924
Total	No.	10,890,602	9,535,559	5,028,029	1,355,043	...	5,862,573
Service.							
Post Offices	No.	293	278	201	15	...	92
Miles travelled by Mail Conveyance	No.	826,510	815,694	678,968	10,816	...	147,542
Receipts and Expenditure.							
Receipts	£	39,536	35,914	19,484	3622	...	20,052
Expenditure	£	44,283	41,770	27,154	2513	...	17,129

Thus, since 1880 the business of the Department, as represented by the number of letters, packets, post cards, and newspapers, has increased by 5,862,573, or 116·59 per cent. The number of Post Offices has in the same time increased by 92, or 45·77 per cent.; and the service, as represented by miles travelled by mail conveyance (678,968 miles), has increased by 147,542 miles, or 21·73 per cent.

The receipts, £39,536, exceed the previous year by £3622, and they exceed the last year of the decade (1880) by £20,052, *i.e.*, equal to an increase of 102·92 per cent.

The expenditure during the year 1889 exceeds that of the previous year by £2513, or 6·02 per cent., and the last year of decade (1880) by £17,129, or 63·08 per cent.

	1889.	1888.	1880.
	s. d.	*s. d.*	*s. d.*
Expenditure per mile travelled by mail conveyance	1 0·85	1 0·28	0 9·59
Ditto per article conveyed by post..	0 0·97	0 1·05	0 1·29

Post Office Money Orders.

		1889.	1888.	1880.
Orders issued and paid	No.	120,455	107,656	33,764
Transactions, total amount	£	290,703	261,036	115,356
Average amount per order	£	2·41	2·42	3·42

The above abstract shows an increase, as compared with the previous year, of—Orders, 12,799, or 11·89 per cent.; transactions, £29,667, or 11·37 per cent. As compared with the year 1880, shows an increase of—Orders 86,691, or 256·75 per cent., and transactions, £175,347, or 151·99 per cent. The great expansion of the Money Order business has taken place principally in the transmission of the smaller amounts,—the average of £3·42 per order in 1880 having fallen to £2·42 in 1888 and to £2·41 in 1889. The continued progress of this business is, therefore, of a most satisfactory character.

Telegraph System.

The figures relating to the business of the Telegraph System of Tasmania are given as follows:—

Particulars regarding the Tasmanian Telegraph System for the Year 1889.

	1889.					1888.
	Government Telegraphs.		*Main Line Railway Telegraphs.*	*Cable Company.*	*All Tasmania.*	*All Tasmania.*
	Telegraph Department.	Govt. Railway Department.				
Stations ..... No.	130	30[a]	16	2	178	165
Officers ..... No.	184	30	22	23	259	244
Length of Line open { Pole miles ... No.	1283	204½	133	...	1620½	1535½
Length of Line open { Cable miles . No.	...	...	...	359	359	359
Ditto Wire, miles ..... No.	1889	208½	133	359	2589½	2505
Ditto Poles being constructed, miles ..... No.	...	...	...	...	...	...
Ditto Wire being constructed, miles ..... No.	...	...	...	...	...	...
Cost of construction and equipment... £	51,365	1000[e]	4695[f]	101,190	158,250	157,130
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ditto per mile, Pole lines and Cable £	40 0 9	22 4 5	35 6 0	28 3 9	79 18 10	82 18 9
Paid Messages ..... No.	220,125	6179	6697	77,526	225,833[i]	219,257[i]
Free Messages ..... No.	54,087[b]	3314	...[g]	...	54,726[i]	52,512[i]
Total Messages ..... No.	274,212	9493	6697	77,526	280,559[i]	271,769[i]
Ditto per Pole or Cable mile... No.	213·73	46·42	50·35	215·95	141·78	143·45
Ditto per Wire ditto ..... No.	145·16	45·53	50·35	215·95	108·34	108·49
Receipts ..... £	12,100[d]	173	255	10,777[h]	23,305	22,621
Working Expenses ..... £	17,052[c]	700	...	4057	21,809	21,202
Ditto per £100 Receipts ..... £	140·92	404·62	...	...	93·58	93·73
Profit ..... £	...	...	255	6720	...	...
Loss ..... £	4952	527	...	...	1496	1419
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Receipts per Pole or Cable mile.....	9 8 7	0 16 11	1 18 5	30 0 4	11 15 5	11 18 9
Ditto per Wire mile	6 8 1	0 16 7	1 18 5	30 0 4	9 0 0	9 0 7
Working Expenses, Pole mile	13 5 9	3 8 5	...	11 6 1	11 0 4	11 3 10
Ditto, Wire ditto	9 0 7	3 7 3	...	11 6 1	8 8 5	8 9 3

[a] Not including two Telephone Stations. [b] Includes 11,000 Shipping Messages (estimated). [c] Including working expenses of Telephone Lines. [d] Does not include receipts from Telephone System. [e] Cost of 45 miles only. [f] Estimated. [g] No. of Free Messages on Railway business not stated. [h] Includes Government subsidies. [i] The same messages may be related to more than one local system, and hence the total for Tasmania is not necessarily the aggregate of the figures under each separate system.

It appears that during 1889 the length of lines of wire opened for the transactions of the cable and land wires was equal to 2589½ miles, *i.e.*, 84½ miles more than during the previous year. The total number of messages, 280,559 (of which 54,726 were free), is more than the corresponding number for last year by 8790 messages, and the receipts, it will be observed, are more than the previous year by £684.

Telephone Systems.

The following summary gives concisely a clear statement of the rapid progress made in the extension of this very useful mode of communication in Hobart and Launceston:—

	1885.	1886.	1887.	1888.	1889.
HOBART.					
Private Lines—					
Circuits..... No.	32	42	39	44	45
Length of Wire..... Miles	40	50	56	63	59½
Annual Rental..... £	230	279	270	291	285
Rental received..... £	204	248	253	259	277
Exchange Lines—					
Circuits..... No.	107	146	172	211	244
Length of Wire..... Miles	34	52	84	103	110
Annual Rental..... £	663	893	1087	1330	1535
Rental received..... £	514	784	978	1198	1437
Public Service Lines—					
Circuits..... No.	34	36	43	44	51
Length of Wire..... Miles	16	17	25	26	36
Annual Rental..... £	219	231	287	293	381
NEW NORFOLK.					
Private Lines—					
Circuits.....No.	...	...	...	...	...
Length of Wire ..... Miles	...	...	...	...	...
Annual Rental ..... £	...	...	...	...	...
Rental received..... £	...	...	...	...	...
Exchange Lines—					
Circuits.....No.	...	...	..	14	18
Length of Wire ..... Miles	...	...	...	7	9
Annual Rental ..... £	...	...	...	84	111
Rental received ..... £	...	...	...	7	110
Public Service Lines—					
Circuits.....No.	...	...	...	1	1
Length of Wire ..... Miles	...	...	...	½	½
Annual Rental ..... £	...	...	..	6	6
Rental received..... £	...	...	...	...	...
Trunk Line to New Norfolk—					
Circuits.....No.	...	...	...	20	25
Length of Wire ..... Miles	...	...	...	22	22
Annual Rental ..... £	...	...	...	59	77
Rental received..... £	...	...	...	5	73
LAUNCESTON.					
Private Lines—					
Circuits.....No.	18	17	24	29	31
Length of Wire ..... Miles	11	11	17	25	27¼
Annual Rental ..... £	103	95	130	180	170
Rental received..... £	88	73	110	206	161

	1885.	1886.	1887.	1888.	1889.
LAUNCESTON—*continued.*					
Exchange Lines—					
Circuits.....No.	129	137	161	177	184
Length of Wire ..... Miles	35	38	47	63	65½
Annual Rental ..... £	780	882	980	1057	1118
Rental received..... £	495	539	908	966	1051
Public Service Lines—					
Circuits.....No.	12	12	13	15	18
Length of Wire ..... Miles	10	10	11	13	16¼
Annual Rental ..... £	77	77	89	106	115
ALL LINES.					
Circuits.....No.	332	390	452	555	617
Length of Wire ..... Miles	146	178	238	323	346¼
Annual Rental { Public ..... £	296	308	376	405	502
Annual Rental { Private..... £	1775	2149	2467	2999	3298
Annual Rental { All..... £	2071	2457	2843	3404	3800
Rental received from Exchange and Private Lines	1302	1644	2248	2641	3109

Thus, there is an increase of 62 Circuits as compared with the previous year, while the Annual Rental value has increased from £3404 to £3800, being an increase of £396, or 12 per cent. nearly.

Rates and Prices.

The current Rates and Prices, ruling over a large number of years, are given in the following tables.

Rates of Wages.

COMPARATIVE Return showing the Rates of Wages during the Years 1841, 1851, 1861, 1871, 1881, 1888, 1889, as far as can be ascertained from the Statistics of the Colony.

	1841.	1851.	1861.	1871.	1881.	1888.	1889.
Agricultural Labour:							
Ploughmen, per week	...	...	...	8/ to 20/	10/ to 18/	10/ to 20/	10/ to 20/
Farm Labourers, ordinary, ditto	...	...	...	6/ to 10/	7/ to 13/	10/ to 17/	8/ to 16/
Reapers, per acre	...	...	...	7/ to 10/	7/6 to 16/	5/ to 20/	7/ to 20/
Mowers, ditto	...	...	...	2/6 to 5/	2/6 to 6/	2/ to 6/	2/ to 6/
Pastoral Labour—*							
Shepherds, per annum	...	...	...	25*l* to 40*l*	25*l* to 40*l*	25*l* to 45*l*	30*l* to 50*l*
Shearers, per 100 sheep	...	...	...	8/ to 16/	11/6 to 20/	11/ to 18/	12/ to 20/
Artisan and other general Skilled Labour—†							
Blacksmiths, per diem	...	...	...	5/ to 10/	5/ to 11/	7/ to 12/	6/ to 10/
Bootmakers, ditto	...	...	...	5/ to 9/6	5/ to 8/	5/ to 10/	5/ to 8/
Bricklayers, ditto	6/ to 7/	5/	6/ to 10/6	5/ to 10/	7/ to 11/	6/6 to 12/	7/ to 12/
Carpenters, ditto	6/ to 7/	5/ to 6/	5/6 to 10/	6/ to 8/	7/ to 11/	5/8 to 10/	6/ to 10/
Engineers, ditto	...	...	...	5/ to 10/	9/ to 13/6	8/ to 14/	8/ to 12/
Joiners, ditto	6/6 to 8/	5/4 to 6/	6/6 to 10/	6/ to 8/	6/6 to 10/	7/ to 10/	7/ to 10/
Masons—							
Cutters, ditto	6/ to 8/	4/9 to 5/7	7/ to 12/	5/6 to 10/	7/ to 12/	6/6 to 12/	6/6 to 12/
Builders, ditto	7/6 to 8/6	5/6 to 6/10	6/6 to 12/	5/3 to 10/	6/6 to 11/	8/ to 12/	7/6 to 12/
Painters, ditto	5/6 to 7/6	5/2 to 5/6	6/ to 10/9	5/ to 8/	6/ to 9/	3/ to 10/	3/ to 11/
Plasterers, ditto	6/ to 7/6	4/3 to 5/	7/ to 10/	5/ to 10/	5/ to 11/	6/ to 11/	6/ to 12/
Plumbers, ditto	6/6 to 8/6	4/6 to 8/	6/6 to 13/	6/ to 9/	8/ to 12/	7/6 to 10/	7/ to 12/
Saddlers, ditto	...	...	...	5/ to 10/	5/6 to 9/	4/2 to 9/	4/2 to 10/
Seamen, per month	...	...	...	2*l* to 4*l* 10/	3*l* to 6*l*	4*l* to 7*l*	4*l* 7/6 to 5*l*
Tanners, per diem	...	...	...	5/6 to 8/	5/ to 8/	4/2 to 9/	4/2 to 9/
Wheelwrights, ditto	...	...	...	5/3 to 8/	6/6 to 10/	5/ to 10/	5/ to 12/

* With rations. † Without rations.

COMPARATIVE Return showing the Rates of Wages—*continued.*

	1841.	1851.	1861.	1871.	1881.	1888.	1889.
Railways—†							
Guards, per diem	...	...	...	...	...	7/ to 10/	6/6 to 10/
Porters, ditto	...	...	...	...	...	5/ to 12/	4/2 to 7/6
Enginemen, ditto	...	...	...	...	...	6/ to 12/	6/6 to 12/
Platelayers and Gangers, ditto	...	...	...	...	...	5/ to 10/	5/ to 11/
Drivers, ditto	...	...	...	...	...	8/ to 14/	8/ to 12/6
Firemen, ditto	...	...	...	...	...	7/ to 10/	7/ to 8/
Fitters, ditto	...	...	...	...	...	10/ to 15/	8/ to 15/
Turners, ditto	...	...	...	...	...	8/ to 15/	8/ to 15/
Miscellaneous Labour—†							
Butchers, per diem	...	...	...	...	5/ to 8/	5/ to 8/4	5/ to 10/
Millers, ditto	...	...	...	5/ to 8/	6/ to 8/	4/2 to 9/	6/ to 10/
Miners, ditto	...	...	...	...	7/6 to 8/4	7/6	10/
Quarrymen, ditto	4/8 to 5/6	3/9 to 4/	4/ to 9/	5/ to 7/	5/ to 7/	5/ to 10/	5/ to 10/
Day Labourers, ordinary, ditto	...	...	...	3/ to 5/	4/ to 7/	3/4 to 8/4	4/ to 8/
Servants—*							
Coachmen, per annum	...	...	...	20*l* to 40*l*	18*l* to 50*l*	25*l* to 60*l*	30*l* to 60*l*
Grooms, ditto	...	...	...	18*l* to 35*l*	22*l* 10/ to 45*l*	20*l* to 50*l*	20*l* to 75*l*
Gardeners, ditto	...	...	...	16*l* to 30*l*	20*l* to 45*l*	20*l* to 104*l*	20*l* to 104*l*
Cooks, ditto	...	...	...	16*l* to 30*l*	20*l* to 40*l*	15*l* to 40/	15*l* to 50*l*
Laundresses, ditto	...	...	...	20*l* to 25*l*	18*l* to 35*l*	14*l* to 40*l*	15*l* to 50*l*
General Servants, ditto	...	...	...	15*l* to 25*l*	16*l* to 36*l*	16*l* to 30*l*	10*l* to 36*l*
Housemaids, ditto	...	...	...	16*l* to 20*l*	12*l* to 20*l*	16*l* to 30*l*	14*l* to 30*l*
Nursemaids, ditto	...	...	...	12*l* to 30*l*	12*l* 10/ to 25*l*	5*l* to 28*l*	8*l* to 20*l*

* With rations. † Without rations.

Prices of Provisions, &c.

Comparative Return showing the General Retail Prices of Provisions and other Articles at Hobart, during the Years quoted, as far as can be ascertained from the Statistics of the Colony.

Articles.	1841.	1851.	1861.	1871.	1881.	1888.	1889.
Butter, Fresh ..... per lb.	..	2/3	1/4	1/ to 2/	10*d.* to 2/	10*d.* to 2/	10*d.* to 2/6
Ditto, Potted.....ditto	..	1/	1/2	9*d.* to 1/	10*d.* to 1/4	8*d.* to 1/6	9*d.* to 1/6
Cheese, Colonial .....ditto	..	1/2	1/6	8*d.* to 9*d.*	6*d.* to 1/	6*d.* to 1/2	6*d.* to 1/2
Ditto, English .....ditto	..	..	1/8	1/2	..	1/6 to 2/6	1/6 to 2/6
Eggs..... per dozen	..	..	..	1/ to 1/6	9*d.* to 2/6	9*d.* to 2/6	10*d.* to 2/6
Ham, Colonial .....per lb.	..	..	..	1/6	1/ to 1/3	9*d.* to 1/	9*d.* to 1/
Meat—							
Bacon.....ditto	..	1/	..	7½*d.* to 9*d.*	9*d.* to 1/	8*d.* to 1/	8*d.* to 1/
Beef .....ditto	5¾*d.*	4*d.*	5½*d.*	5½*d.* to 7*d.*	2½*d.* to 8*d.*	5*d.* to 8*d.*	4*d.* to 8*d.*
Mutton .....ditto	5¾*d.*	3*d.*	5½*d.*	2½*d.* to 6*d.*	2*d.* to 8*d.*	3*d.* to 7*d.*	3*d.* to 6*d.*
Milk..... per quart	..	..	8*d.*	6*d.*	4*d.* to 6*d.*	4*d.* to 6*d.*	3*d.* to 6*d.*
Bread..... per 2-lb. loaf	..	5*d.*	3½*d.*	3*d.* to 3½*d.*	2½*d.* to 3*d.*	3*d.* to 3½*d*	3*d.* to 3½*d.*
Flour, Fine .....per ton	21*l*	10*l*	14*l* 10/	11*l* 10/ to 12*l* 10/	10*l* to 12*l*	11*l* to 15*l*	10*l* to 12*l*
Grain—							
Wheat .....per bushel	8/9	9/	5/ to 6/	4/9 to 5/	4/ to 5/	4/6 to 6/	4/6 to 6/
Barley .....ditto	6/	..	6/	3/9 to 5/	3/6 to 4/6	2/6 to 4/6	2/6 to 4/
Oats .....ditto	5/6	..	3/ to 4/	3/ to 3/9	2/6 to 3/	2/3 to 2/6	2/3 to 4/
Rice.....per lb.	2½*d.*	2*d.*	4*d.*	3½*d.* to 4½*d.*	3*d.* to 4*d.*	3*d.* to 4*d.*	3*d.* to 4*d.*
Sugar, Counter and Ration.....ditto	3½*d.*	2½*d.*	4*d.*	3*d.* to 4½*d.*	3½*d.* to 5*d.*	3*d.* to 5*d.*	3*d.* to 5*d.*
Vegetables—Potatoes .....ditto	6*l*	3*l* 10/	4*l*	3*l* 10/ to 4*l*	3*l* to 4*l* 10/	4*l* to 7*l*	4*l* to 7*l*
Spirits .....per gallon	..	..	1*l* 8/	1*l* 12/ to 2*l* 2/	1*l* 8/ to 1*l* 12/	1*l* 4/ to 1*l* 12/	1*l* 4/ to 1*l* 12/
Malt Liquors—Beer .....ditto	..	1/4	2/	2/	2/	2/	2/
Wines .....per doz.	..	..	..	1*l* 10/	1*l* 10/ to 3*l*	1*l* 4/ to 2*l* 8/	1*l* 4/ to 2*l* 8/
Tobacco .....per lb.	..	3/6	5/6	3/6 to 5/	4/ to 5/6	4/6 to 5/	5/
Tea .....ditto	3/3	1/1	2/6	1/6 to 3/6	2/ to 3/	1/4 to 2/9	1/4 to 2/
Coffee .....ditto	..	1/	2/	1/8	2/	1/ to 1/6	1/ to 1/6
Candles, Tallow ..... ditto	..	4½*d.*	7*d.*	6*d.*	6*d.*	4*d.* to 1/2	6*d.*
Soap .....per cwt.	2*l* 8/	1*l* 8/	..	1*l* 16/ to 1*l* 18/	1*l* 10/ to 2*l*	1*l* 5/ to 1*l* 17/	1*l* 5/ to 1*l* 17/
Hay .....per ton	5*l* 10/	..	3*l* to 6*l*	2*l* 10/ to 3*l*	2*l* 10/ to 4*l*	3*l* 10/ to 6*l*	3*l* 10/ to 6*l*
Straw .....ditto	..	..	..	2*l*	1*l* 15/ to 2*l* 10/	1*l* 10/ to 3*l*	1*l* 10/ to 3*l*
Firewood—Uncut .....per ton	..	9/	..	8/ to 12/6	9/ to 12/	12/ to 18/	10/ to 11/
Oil, Kerosene .....per gallon	1/9	4/	6/	3/6 to 4/	3/ to 3/6	2/4 to 2/9	2/4 to 2/9
Coals..... per ton	16/6	15/	..	18/ to 1*l* 3/	20/ to 30/	16/ to 30/	18/ to 25/

RETURN showing Average Prices of Fruit used in the manufacture of Jam for Season 1889.

		s.	d.
Apricots	per lb.	0	1¼
Blackberries	„	0	1
Cherries	„	0	0¾
Currants, Black	„	0	2
„ Red	„	0	1½
Gooseberries	per bushel	2	6
Peaches	„	3	0
Plums (Damson)	„	2	6
Plums (Egg)	per bushel	3	6
„ (Greengage)	„	3	6
„ (Orlean)	„	3	0
„ (Other)	„	3	0
Quinces	„	3	0
Raspberries	per lb.	0	2
Strawberries	„	0	2

CONTRACT PRICES.

RETURN of the Average Contract Prices of certain Articles supplied in Hobart to the Government of Tasmania during the year 1889.

Class.*	Order.	Articles.	Prices.
III.	21	Butchers' Meat—	
		Beef and Mutton ..... per 100 lbs.	29/
		Butter, Fresh ..... per lb.	1/4
		Ditto, Potted ..... ditto	1/6.
		Eggs ..... per dozen	1/4
III.	22	Barley, Pearl ..... per lb.	3*d.*
		Bread, Fine ..... per 100 lbs.	10/7
		Currants ..... per lb.	5½*d.*
		Flour, Fine ..... per ton	£10 15/6
		Oatmeal ..... per lb.	3*d.*
		Raisins ..... ditto	6½*d.*
		Rice ..... ditto	2¼*d.*
		Sago ..... ditto	6*d.*
		Sugar, Ration, (in Bond) ..... per ton	£15 19/0
		Ditto, Counter, (in Bond) ... per ton	£18 1/8
III.	23	Brandy, Pale, (in Bond) ... per gallon	8/10
		Rum (in Bond) ..... per gallon	1/7½
		Gin (in Bond) ..... per case	13/1
		Malt Liquor—	
		Colonial Ale ..... per 54 galls.	£4
		Ditto, Porter ..... per 54 galls.	£4 5*s.*
		Wine, Port, (in Bond) ..... per gallon	7/6
		Vinegar ..... per pint	4*d.*
		Tea, Black, Congou (in Bond) ... per lb.	8*d.*
		Coffee, Whole, Roasted ..... ditto	1/6
		Tobacco, Cavendish, (in Bond) .... ditto	11½*d.*
		Salt ..... ditto	¾*d.*
IV.	24	Candles, Composition ..... ditto	7*d.*
		Ditto, Tallow ..... ditto	3½*d.*
		Oil, Kerosene (in Bond) ..... per gallon	10½*d.*
		Oil, Black ..... per gallon	4/9
		Soap, Yellow, Colonial ..... per lb.	2*d.*

Prices of Various Articles.

Textile Fabrics and Dress.

Return showing the Current Prices of Clothing, &c. paid in Hobart, for Persons of the Labouring Class, in the Year 1889.

Men's.		s.	d.		s.	d.
Boots, strong	per pair	7	6	to	10	6
Caps	each	1	0	„	3	0
Coats (Tweed)	„	5	0	„	15	0
Frocks, duck	„	2	6	„	3	6
Handkerchiefs, cotton	„	0	2	„	0	6
Hats, felt	„	1	0	„	4	0
Ditto, Manila or Panama	„	1	6	„	5	0
Ditto, straw	„	1	0	„	2	6
Jackets (Dungaree)	„	4	0	„	5	6
Shirts, Crimean	„	4	0	„	7	6
Ditto, white cotton	„	3	0	„	5	0
Ditto, coloured or striped cotton	„	1	0	„	3	6
Ditto, flannel (under)	„	3	6	„	5	0
Ditto, merino „	„	1	0	„	4	0
Shoes, strong	per pair	7	6	„	10	6
Socks, cotton	„	0	3	„	0	9
Ditto, woollen	„	0	9	„	1	3
Stockings, cotton	„	0	6	„	1	0
Ditto, woollen	„	1	0	„	2	0
Trousers, common (tweed)	„	6	0	„	10	6
Ditto, duck or dungaree	„	3	0	„	3	6
Ditto, moleskin	„	4	6	„	9	0
Vests, common (Tweed)	each	3	6	„	6	0
Suits, tweed or cloth		13	0	„	40	0
Trousers and Vest		10	0	„	25	0
Blankets	per pair	4	6	„	17	6

Women's.		s.	d.		s.	d.
Bonnets, straw	each	0	6	to	3	0
Calico, grey	per yard	0	2	„	0	6
Ditto, white	„	0	2	„	0	6
Chemises	each	1	6	„	3	0
Drawers, L. cloth	„	1	6	„	2	6
Dresses, merino or alpaca	per yard	0	4	„	1	6
Ditto, print	„	0	3	„	0	8
Ditto, muslin	„	0	4	„	0	8
Ditto, wincey	„	0	4	„	1	2
Flannel	„	0	7	„	1	6
Hats, straw	each	0	3	„	3	0
Mattresses	„	10	0	„	15	0
Night-dresses, L. cloth	„	2	0	„	5	0
Palliasses	„	7	6	„	12	6
Petticoats, calico	„	1	0	„	3	0
Ditto, flannel	„	3	0	„	5	0
Shawls, woollen or printed	„	5	0	„	15	0
Sheeting, grey calico	per yard	0	7½	„	1	1
Ditto, white	„	0	10½	„	1	6
Shoes	per pair	6	0	„	10	0
Stays	„	1	0	„	3	6
Stockings	„	0	3	„	1	0

HOUSE Rent, &c. in Hobart and Launceston, and in Suburbs.

	Hobart.	Launceston.
3 Rooms, per week	5*s.* to 7*s.*	6*s.* to 8*s.*
Ditto, with Garden	7*s.* to 9*s.*	7*s.* to 9*s.*
4 or 5 Rooms, per week	9*s.* to 13*s.*	10*s.* to 15*s.*
Ditto, with Kitchen and Garden, ditto	11*s.* to 15*s.*	15*s.* to 20*s.*
Larger Houses, per year	£45 to £80.	£50 to £80.
Superior ditto, ditto	£80 to £150	£80 to £200.
Board and Lodging, per week	15*s.* to 25*s.* and upwards	14*s.* to 30*s.* and upwards

CHAPTER XI.

Accumulation.

Coinage and Accounts.

THERE is no Mint in Tasmania, and the coinage is that of the United Kingdom, which in all respects is similar to that used in the neighbouring Colonies. The accounts are accordingly kept in sterling money (£ *s. d.*) The limit of legal tender for silver is forty shillings; bronze pence, twelve (1*s.*); and bronze half-pence, twelve (6*d.*) During the year 1889 the local currency has been improved by the introduction of £1802 worth of new coin,—viz., gold, £1000; silver, £692; bronze, £110.

Rates of Exchange.

The rates of exchange for bank or mercantile bills is nearly the same as in former years as regards the Australasian Colonies. The average selling rate with London at 60 days' sight has been considerably reduced since 1882.

	London.	Victoria.	New South Wales.	South Australia.	Western Australia.	Queensland.	New Zealand.	Fiji.
Average purchasing rate at sight or on demand—								
Discount, per cent.	—	¼	½	½	1½	½	¾	1
Average purchasing rate at 60 days' sight	¼	—	—	—	—	—	—	—
Average selling rate at 60 days' sight	¾	—	—	—	—	—	—	—
Ditto, at sight or on demand	—	¼	½	¾	1½	¾	¾	1½

Rates of Discount.

The average rates of discount during 1889 were as follows; viz.—For Bills having a currency of 95 days, 7½ per cent.; for bills having a currency beyond 95 days, 8½ per cent.

Interest on Fixed Deposits.

The Interest allowed on Fixed Deposits during 1889 varied as follows:—For three months, 3 per cent.; for six months 4 per cent.; for twelve months 5 per cent.

Banks.

There were five banks of issue in Tasmania during the year 1889, possessing 31 branches or agencies within the Colony. On the 31st December the total liabilities amounted to £4,221,404, and the total assets amounted to £4,462,522. The assets thus exceeded liabilities by £241,118. The actual relation of liabilities to assets, so far as the English and local Banks are concerned, is shown as follows:—

1888.	English Banks.	Local Banks.
Assets in excess of liabilities	...	£632,562
Liabilities in excess of assets	£378,385	...

The following is a synopsis showing full particulars regarding assets and liabilities, together with comparisons with the former year 1888, and with the first year of the last decade:—

ASSETS.—NUMERICAL.

	1889.	1888.	1880.	1889 Compared with 1888. Increase.	1889 Compared with 1888. Decrease.	1889 Compared with 1880. Increase.	1889 Compared with 1880. Decrease.
	£	£	£	£	£	£	£
Specie and Bullion	593,405	635,239	483,435	...	41,834	109,970	...
Landed Property	111,751	105,041	40,857	6710	...	70,894	...
Balance due from other Banks	414,475	183,778	82,211	230,697	...	332,264	...
Debts due to Banks	3,342,891	2,998,441	1,608,484	344,450	...	1,734,407	...
	4,462,522	3,922,499	2,214,987	540,023	...	2,247,535	...
CENTESIMAL.							
Specie and Bullion	13·30	16·19	21·81	...	7·05	22·75	...
Landed Property	2·51	2·68	1·85	6·39	...	173·52	...
Balance due from other Banks	9·29	4·69	3·70	125·53	...	404·16	...
Debts due to Banks	74·90	76·44	72·64	11·49	...	107·83	...
	100·00	100·00	100·00	13·76	...	101·47	...

LIABILITIES.—NUMERICAL.

Notes in circulation	158,759	153,944	122,442	4815	...	36,317	...
Bills in circulation	87,545	63,909	5441	23,636	...	82,104	...
Balance due to other Banks	16,252	35,794	14,672	...	19,542	1580	...
Deposits	3,958,848	3,564,716	2,122,091	394,132	...	1,836,757	...
	4,221,404	3,818,363	2,264,646	403,041	...	1,956,758	...
CENTESIMAL.							
Notes in circulation	3·77	4·03	5·39	3·13	...	29·66	...
Bills in circulation	2·08	1·68	·26	36·98	...	1508·99	...
Balance due to other Banks	·38	·94	·66	...	120·24	10·77	...
Deposits	93·77	93·35	93·69	11·06	...	86·55	...
	100·00	100·00	100·00	10·56	...	86·40	...

Commenting upon the relationships between the total assets and liabilities of different years is comparatively of very little value, as the accounts respecting English banks do not profess to give the full extent of the proportion of assets and liabilities of their Tasmanian branches, but only such part as these banks find it necessary to localise in Tasmania. It is noteworthy, however, that while the assets of local banks exceed their liabilities by 20·37 per cent., the local assets of foreign banks are 36·04 per cent. under the local liabilities. On the whole it is shown, in respect of assets, that there is an absolute increase of £540·023, or 13·76 per cent., as compared with the previous year. The decrease is confined to specie and bullion. Since 1880 assets have increased 101·47 per cent. With respect to liabilities, there has been an increase of £403,041, or 10·56 per cent., as compared with the previous year. In Balance due to other Banks there has been a slight decrease as compared with 1888.

The following Tables show the relative value of the various items of assets and liabilities during 1889, in the order of their importance. The corresponding percentages for the years 1888 and 1880 are also given for the purposes of comparison :—

ASSETS—Per cent. to Total.

	1889.	1888.	1880.
1. Debts due to Banks	74·90	76·44	72·64
2. Specie and Bullion	13·30	16·19	21·81
3. Landed property	9·29	4·69	3·70
4. Balance due from other Banks	2·51	2·68	1·85

LIABILITIES—Per cent. to Total.

	1889.	1888.	1880.
1. Deposits	93·77	93·55	93·69
2. Notes in circulation	3·77	4·03	5·39
3. Bills in circulation	2·08	1·68	·26
4. Balance due to other Banks	·38	·94	·66

Savings Banks.

The following is a statement with respect to the various Savings Banks in Tasmania during 1889, together with comparisons with the years 1880 and 1888 respectively :—

SAVINGS Banks, 1880, 1888, 1889.

	Hobart Savings Bank.	Launceston Savings Bank.	Post Office Savings Bank.	ALL.
Depositors, 1880..... No.	7509	6011	...	13,520
Ditto, 1888 ..... No.	10,910	9042	3138	23,090
Ditto, 1889 ..... No.	11,525	9481	3391	24,397
Depositors' balances, 1880 ..... £	210,772	99,309	...	310,081
Ditto, 1888..... £	271,704	150,132	48,092	469,928
Ditto, 1889..... £	290,708	154,795	51,989	497,492
Average amount of each depositor's balance, 1880..... £	28 1 4	16 10 4	...	22 18 8
Ditto, 1888..... £	24 18 1	16 12 1	15 6 6	20 7 0
Ditto, 1889..... £	25 4 6	16 6 7	15 6 7	20 7 10

As compared with 1880 the year 1889, in respect of number of depositors, shows an increase of 4016, or 53·48 per cent., and in respect of deposits, an increase of £187·411, or 60·44 per cent.

Similarly compared with the previous year 1888, in respect of number of depositors there is an increase of 1307, or 5·66 per cent.; in respect of deposits there is an increase of £27,564, or 5·87 per cent. The average amount to credit of each depositor has slightly increased. The Post Office Savings Bank system was only initiated during the latter portion of the year 1882, since which time the progress has been very encouraging.

Property Valuation.

The following abstract gives particulars of the steadily increasing value of property during the last ten years:—

PROPERTY Valuation—Decennial Return.

Year.	Municipalities Hobart and Launceston.	Rural Municipalities.	Police Districts.	TOTALS.
	£	£	£	£
1880	195,484	373,312	136,236	705,032
1881	199,738	373,576	140,798	714,112
1882	211,389	375,199	158,832	745,420
1883	224,338	385,100	168,330	777,768
1884	259,735	389,314	188,867	837,916
1885	263,425	391,885	195,471	850,781
1886	272,631	381,235	194,407	848,273
1887	277,940	383,257	207,877	869,074
1888	286,033	382,719	223,191	891,943
1889 *.....	295,503	387,342	240, 812	923,657

* The capital value of rateable property, according to revised return prepared by Mr. Butler on December 17th, 1889, is stated to be £21,386,848, and the assessed annual value £1,102,397.

Thus, of property in Tasmania during 1889, 32·04 per cent. of the value was situated in the Municipalities of Hobart and Launceston; 41·88 per cent. in the Rural Municipalities,—*i.e.*, nearly one half; and 26·08 per cent. was situated in the Police Districts.

Since the year 1880 the annual value of assessed property has increased 31·01 per cent. The order of the three subdivisions, as regards the largest relative increase, is given as follows:—

Percentage Increase since 1880.

1. Police Districts	76·76	per cent. increase.
2. Municipalities Hobart and Launceston	51·16	" "
3. Rural Municipalities	3·76	" "

It must be borne in mind, however, that Railway and Mining property do not appear in the valuation of assessed property. The former was stated to represent a capital value of £2,925,326 on 31st December, 1889.

Accumulated Wealth.

The determination of the exact wealth of a country, whether public or private, is a matter which is surrounded with many difficulties. This is especially the case as regards the majority of the Australasian Colonies, where there is no Income Tax to throw light upon the extent and sources of *Private Wealth*. As regards wealth contained in Government and local property, the difficulties are even greater, for in all the British Colonies the mere acreage of the vast amount of unalienated lands affords very little aid in determining their real *present* value, and it is also difficult to guage the capital value of a great part of public works and undertakings which, although not yielding any revenue, indirectly add largely to all other forms of the capital wealth of a country. Another difficulty presenting itself to the statisticians, leading the incautious to many erroneous conclusions, is the common tendency to place too great stress upon results obtained by the aid of arbitrary determined values for unknown data.

Mr. Goschen's warnings in this respect are of much value, for he wisely affirms: "Given a great number of figures partially unknown, given unlimited power and discretion of selection, and given an enthusiast determined to prove his case, and I will not answer for the consequences;" and as an illustration of the illusion which may be possible by the array of masses of figures improperly used by a too eager advocate, the same writer points out, "the administrator of statistics is like a showman who is exhibiting certain figures. According as he throws light and shade upon the pictures which he exhibits, he can produce true or false impressions. Whole rows of figures he may throw into impenetrable shade, while others are at the same time brought into excessive prominence, and thus, to the eye of the spectator much may be rendered invisible, and much may be distorted by exaggerated lights, which turn facts into caricatures."

Many estimates of the wealth of a community are fairly open to such charges, especially so when used for the purposes of discussing comparative wealth in different places or times without sufficient attention to the variability of the data.

Notwithstanding these difficulties and dangers, the importance of ascertaining, however roughly, some estimate of the progress of a country demands that an attempt should be made to gauge the wealth of a community at different periods, and to measure the rate of its

progress by the light of the experience of other countries similarly conditioned.

Private Wealth.

Where statistics relating to income are not available for ascertaining the capital amount of the private wealth of the community, it has been ascertained that a fair approximate of its amount is revealed indirectly by the amount of property left by persons dying. If the period be broad enough, it has been shown that the division of the total amount of property left by persons dying by the total number of deaths within the period would correspond closely with the average wealth *per head* of the total living population. The amount sworn under each year in connection with Probates and Letters of Administration is the only means for ascertaining the extent of property left by deceased persons. It is unfortunate, however, that the laws relating to succession duties differ widely in different countries. In Tasmania, for example, the major part of private wealth (real estate) is not subject to duty, and forms no part of the property sworn under Probates and Letters of Administration. In all the other colonies of Australia (Western Australia excepted*) real estate is included. Comparisons between different countries cannot be correctly made under such circumstances unless due allowance be made for the varying conditions.

Besides, it must be borne in mind that in most countries any property under a given limit—usually £100—is exempt from duty, and as this may represent a very considerable amount as regards the great mass of the population, it mars to some extent the value of this index to the general wealth.

So long, however, as comparisons between different times or places are formed exactly by the same method and upon similar data, the relative or comparative results may be taken as approximately true, even though the data be somewhat imperfect. This is borne out by a statistician of great distinction (Dr. Giffen), who has affirmed that, "According to a well known statistical experience, the comparison of the growth or increment may be reasonably successful if *the same method is followed on each occasion* in working out the data for the comparison, although these data themselves may be unavoidably incomplete." Accordingly, it may be taken with some confidence that the estimate of private wealth in Tasmania for the various successive periods shown in the following table is fairly accurate as showing the progress and relative values of the wealth of the different periods, even if incomplete in themselves absolutely; the capital value of real estate in each case being computed for 21 years' purchase of the ascertained annual value of rateable real estate, and the capital value of personal property is based upon the ascertained amounts as sworn to under Probates and Letters of Administration.

* There are no succession duties in this Colony.

PRIVATE Wealth, Tasmania, 1875-9 to 1889.

	Period.			Year
	1875-9.	1880-4.	1885-9.	1889.
Population .....Average	107,733	122,585	142,222	151,480
Deaths .....Total	9241	9586	10,307	2098
Probates and Letters of Administration .....Total	623	920	1183	225
Ditto per cent. of Deaths...	6·7	9·6	11·5	10·7
Amount of Personal Property sworn to .....£	1,001,904	1,171,122	1,290,470	296,747
Ditto per Estate .....£	1608	1273	1091	1319
Ditto per total number of Deaths, equivalent to value per head of living Population .....£	108·42	122·17	125·17	125·17*
Real Estate, Capital Value per head ..... £	126·16	129·52	134·85	152·83
Real Personal Property, Capital Value .....£	234·88	251·69	260·05	278·03
Real Estate, Capital Value ....£	13,595,000	15,877,000	19,165,000	23,150,000
Personal Estate, Capital Value £	11,680,000	14,976,000	17,807,000	18,966,000
Real Personal Estate, Capital Value .....£	25,275,000	30,853,000	36,972,000	42,116,000
Public Debt.....£	1,624,981	2,317,000	4,202,322	5,019,050
Rates of Public Debt to Private Wealth	6·43	7·51	11·36	11·91

If we examine the figures in the preceding tables, relating to the development of private wealth in Tasmania, it will be observed that in a period of about twelve years private wealth has increased by £16,841,000 or 66·4 per cent., a most satisfactory advance, while the Public Debt—representing Public Works and undertakings, viz., Railways, Telegraphs, Roads, Harbours, &c.—altogether outside of private wealth—has increased by £3,394,069. That is, while in this period private wealth alone has increased by £43 19*s.* 5*d.* per head of the population, owing largely to the Public Works for which the debt of the Colony was contracted, the latter has only increased by £17 1*s.* 6*d.* within the same period. When it is also shown that the total Public Debt of the Colony only bears the proportion of 11·9 per cent. of its private wealth, and that this proportion is 21 per cent. lower than the average of the proportion of the seven Australasian Colonies, it is clear that the material progress of the Colony within the period named is eminently satisfactory.

Public Wealth.

Independently of the forty-two millions of private wealth in Tasmania, there is the public wealth represented by its unalienated lands (twelve million acres), mines, forests, and fisheries, which cannot be set down at a lower figure than twelve millions. The property of

the Local and General Government in Railways, Telegraphs, Buildings, Public Works, &c. may represent nearly a sum of six million pounds.

Altogether it would appear, as in the following summary, that the public and private wealth of Tasmania represents about sixty million sterling, thus:—

	Million £.	Per head.	Rates of Public Debt to Wealth per cent.
Public Wealth.....	18	119	27·8
Private Wealth	42	278	11·9
Total Wealth...	60	397	8·3

Private Wealth in Australasian Colonies.

The details from which the aggregate wealth can be computed are not available for some of the Colonies; but an estimate has been made by Mr. Coghlan, the Government Statistician of New South Wales, which is believed to be fairly exact. The figures for Tasmania are, however, independently computed from local data as shown in the previous table. In Mr. Coghlan's admirable statistical account of the seven Colonies of Australasia, the Private Wealth of Tasmania was greatly understated, probably because he was not aware that the Tasmanian figures relating to Probates and Letters of Administration do not include Real Estate, which in itself, for the year 1889, represents a capital sum of £23,150,000, reckoning the assessed annual value of property at 21 years' purchase.*

PRIVATE Wealth Australasian Colonies, Year 1889.

Colony.	Private Wealth.		Rates of Public Debt to Private Wealth.
	Total.	Per Inhabitant.	
	Million £	£	Per cent.
New South Wales	410	371	11·3
Victoria	386	350	9·6
New Zealand	145	235	25·6
Queensland	106	266	24·4
South Australia	57	182	35·8
Tasmania	42	278	11·9
Western Australia	6	144	22·9
	1152	300	15 1

* Mr. Giffen recently estimated the lands of the United Kingdom at 26 years' purchase.

Private Wealth of various Countries.

In the following table the Private Wealth, Debt, and Taxation of principal countries in Europe and America are contrasted with corresponding figures relating to the various Colonies of Australasia; and it would seem that, although the total amount of private wealth of the

latter is insignificant when compared with Europe or America, yet it is remarkable that, relative to population, it should be so very much higher,—being £186, or 163 per cent., above the average of European countries, and £147, or 96 per cent., above American countries. It will also be observed that the rates which taxation in the Australasian Colonies--viz., 1 per cent.—is much lower than the average of European countries, which bears the rates of 1·8 per cent. If the moneys expended on Railways and other Public Works were added to the private wealth of Australia, it would represent nearly 1317 millions, or £348 per head. This would lower the rates of Public Debt from 15·1 to 13·2 per cent. of total wealth.

It will be seen, therefore, that the Public Debt of these Colonies bears a small proportion to public and private wealth. Of necessity, in young Colonies the State undertakes many functions left to private enterprise in older countries. For example, the greater part of the money standing as a Public Debt against the Australasian Colonies has been expended on Roads, Bridges, Telegraphs, and Railways, and instead of being a burden its amount should really be regarded as an index to the enhanced value of the public and private wealth of the country.

In the United Kingdom the paid-up capital of Railways belonging to private companies amounts to £864,695,963. If this sum alone (the equivalent of which is always the large item of colonial debts) were added to the National Debt of the United Kingdom it would be more than doubled, for it would amount to £1,563,126,534 = £41·34 per head of population, or £12,867 per square mile. There are many fallacies, therefore, which unskilled persons are apt to fall into in comparing the financial conditions of young Colonies if such considerations are not kept prominently before the mind.

Broadly speaking, European national debts are indices of the waste of war or of other national calamities. In Australian Colonies, on the contrary, the Public Debt per square mile is a fairly correct index of the energy displayed by the particular Colony in opening and improving its virgin lands for agricultural, pastoral, and mining purposes.

PRIVATE Wealth, Debt, and Taxation of various Countries compared.*

	Million Pounds.			Ratio.			Private Wealth per head.
	Private Wealth.	Debt.	Taxation.	Private Wealth.	Debt.	Taxation.	
Europe—							
United Kingdom	8720	763	124	100	8·7	1·4	249
France.....	8060	911	145	100	11·3	1·8	218
Germany	6323	229	104	100	3·6	1·7	140
Russia.....	4343	553	85	100	12·7	1·9	53
Austria	3613	419	74	100	11·6	2·1	95
Italy	2351	522	74	100	22·2	3·2	82
Spain	1593	390	41	100	24·5	2·6	93
Portugal.....	371	94	8	100	25·4	2·1	79
Belgium	806	62	14	100	7·7	1·7	145
Holland.....	987	80	10	100	8·1	1·0	240
Denmark	306	10	4	100	2·8	1·1	146
Sweden & Norway ...	977	20	10	100	2·0	1·0	146
Greece.....	211	18	3	100	8·6	1·4	107
Europe	38,721	4071	696	100	10·5	1·8	114
America—							
United States.....	9495	333	160	100	3·5	1·7	180
Canada.....	650	48	6·38	100	6·2	1·0	148
Argentine Republic ...	332	...	...	...	...	...	146
America	10,477	...	...	...	...	...	153
Australasia—							
New South Wales.....	410	46	2·67	100	11·3	0·65	371
Victoria	386	37	3·74	100	9·6	0·97	350
New Zealand.....	145	37	2·68	100	25·6	1·4	235
Queensland	106	26	1·55	100	24·4	1·5	266
South Australia.....	57	20	0·71	100	35·8	1·3	182
Tasmania	42	5	0·42	100	11·9	1·0	278
Western Australia.....	6	1·3	0·19	100	22·9	3·1	144
Australasia.....	1152	174	11·36	100	15·1	1·0	300

*The figures for the United States and Europe are taken from Mulhall's Dictionary of Statistics, and do not exactly represent the figures of the latest year, although near enough for a general comparison as regards ratios.

Income of the Tasmanian People.

In the absence of an Income Tax it is difficult to arrive at a satisfactory estimate of the yearly income of the people. But if we bear in mind that wages in these colonies are about 75 per cent. above the average in the United Kingdom, where the average income has been ascertained to be equal to £36 per head of population, or £80 per breadwinner, the estimate of £52 per head of population for New South Wales, as accepted by Mr. Coghlan for that colony, cannot be far wide of the truth, and would represent £117 per breadwinner.

It must be borne in mind that a much smaller proportion of the earnings of the people is derived from capital investments than from salaries and wages; and as the former is divided among from 9 to 12 per cent. of the breadwinners, the amount per head for this class is on the average at least twice as much. It follows, therefore, that the mean of all earnings *per head* must be considerably greater than the mean of salary and wages classes alone.

The Civil Service of Tasmania is a very fair example of the salaries and wages classes generally. It embraces in its Public Works, Railways, Workshops, Printing Office, and other departments, nearly all the principal branches of skilled and ordinary labour. From the analyses of the Estimates of the last two years it is found that the mean yearly rate per year of all salaries and wages, high and low, amounts to about £100 per head. If it be assumed that the salaries and wages class represent, say, 90 per cent. of all breadwinners, and that the average earnings of the remaining 10 per cent. capitalists are only 50 per cent. per head greater than the salary and wages class—this would raise the aggregate mean of all breadwinners to £115 per year, equivalent to £51 per head of the population, or a total of £7,718,900 for all incomes in respect of 67,121 breadwinners in the year 1889.

Where there is no Income Tax it is almost impossible to ascertain the distribution of incomes. The references to other countries where an Income Tax is levied is apt to mislead, for both the distribution and the aggregate incomes vary as widely as the local natural sources of wealth and the prevailing forms of industry. The analyses of assessed incomes at different times in the three great divisions of the United Kingdom, although of some value as regards distribution of wealth, show great differences in the ratios, thus:—

PROPORTION of Assessed Incomes in relation to the Gross Income of the people in the United Kingdom.

YEAR 1867.

	Breadwinners. (Percentage.)			Gross Income. (Percentage.)		
	For Incomes below £100.	For Incomes above £100.*	All.	For Incomes below £100.	For Incomes above £100.*	All.
England and Wales	89·3	10·7	100	47·5	52·5	100
Scotland	91·7	8·3	100	53·2	46·8	100
Ireland.....	96·1	3·9	100	66·3	33·7	100
United Kingdom	90·8	9·2	100	49·8	51·2	100

* Incomes under £100 exempt from duty.

PROPORTION of Assessed Incomes—*continued.*

YEAR 1877.

	Breadwinners. (Percentage.)			Gross Income. (Percentage.)		
	For Incomes below £150.	For Incomes above £150.	All.	For Incomes below £150.	For Incomes above £150.	All.
England and Wales	97·31	2·69	100	54·2	45·8	100
Scotland	98·12	1 88	100	55·0	45·0	100
Ireland.....	99·34	0·66	100	54·5	45·5	100
United Kingdom	97·72	2·28	100	54·3	45·7	100

* Incomes under £150 exempt from duty.

The above tables show that, as regards the year 1867, 51·2 per cent. of all incomes over £100 was absorbed by 9·2 per cent. of the breadwinners; and as regards 1877, it appears that 45·7 per cent. of all incomes over £150 was absorbed by 2·28 per cent. of the breadwinners.

In the Australasian Colonies, however, the composition of the wealthy and industrial classes are altogether different, there being a smaller proportion of the lower industrial, or rather—owing to the richer natural sources of wealth—the larger proportion of the lower industrial of European countries are, by the improved local conditions, raised into the position of the higher industrial of older countries.

This is revealed by an unmistakable index of relative wealth—viz., the nominal rent value of the houses occupied by the various classes, and especially the proportions inhabiting houses over the rent value of £20 per year, and between £20 and £80. The figures obtained by the last census in relation to dwellings enable us to make the following comparison, which may be taken as fairly exact :—

PROPORTION of the people inhabiting houses whose rental is—

	Under £20.	Between £20 & £80.	£80 and over.	All.
Great Britain.....	84·66	13·32	2·02	100
Victoria	63·96	34·04	2·00	100
Tasmania	64·78	33·22	2·00	100

No better index of the improved condition of the mass of the people of these Colonies could be given than that afforded by the above contrast, wherein it is shown that about 20 per cent. of the lower industrial, by improved local conditions, have been raised into the class next above them of Europe.

It is probable, therefore, in the division of the £7,718,900 (estimated as the value of the total income of the Tasmanian people), the proportion absorbing income over £150 would be very much higher than in the United Kingdom, and somewhat as follows :—

DISTRIBUTION of Income in Tasmania.

	Income under £150.	Income £150 & over.	Total.
Breadwinners, No.	58,395	8726	67,121
Per cent. ditto	87·0	13·0	100
Total income.....	£5,094,474	£2,624,426	£7,718,900
Ditto per cent	66·66	33·33	100
Ditto per breadwinner	£87·1	£300·8	£115
Ditto per head	38·6	133·3	51

Income of Various Countries.

The comparison of the gross earnings of Australasia with the principal American and European Countries, as in the following table, throws up in a strong light the superior conditions of the masses of the people in the Colonies of Australasia.

GROSS Earnings in various Countries.

Country.	Total Earnings.	Earnings per Head.
Europe—	Million £	£
1. England and Wales	1048	41·0
2. United Kingdom	1247	35·0
3. *Scotland*	121	32·0
4. Holland	104	26·0
5. France	965	25·7
6. Denmark	47	23·2
7. Belgium	120	22·1
8. Germany	850	18·7
9. Austria	602	16·3
10. Sweden and Norway	104	16·2
11. *Ireland*	78	16·0
12. Switzerland	44	16·0
13. Spain	218	13·8
14. Portugal	61	13·6
15. Italy	345	12·0
16. Greece	23	11·8
17. Russia	848	9·9
Europe	5578	19·0
America—		
1. United States	1420	27·2
2. Canada	118	26·9
America.....	1538	27·0
Australasia—		
1. New South Wales	54	52
2. Tasmania	7·7	51
3. Australasia	193	51

Generally, therefore, it would appear that the average income per head in Australasia is about 24·4 per cent. above the highest in Europe, and 168 per cent. above its average. In relation to the average of America, the advantage is about 89 per cent. in favour of Australasia.

Mortgages registered.

	1888.		1889.		1880.	
	No.	Per cent. to Total.	No.	Per cent. to Total.	No.	Per cent. to Total.
Under the old system.....	894	49·34	716	46·43	421	57·36
Under Real Property Act...	918	50·66	826	53·57	313	42·64
TOTAL.....	1812	100·00	1542	100·00	734	100·00
	£	Per cent. to Total.	£	Per cent. to Total.	£	Per cent. to Total.
Under the old system.....	711,082	65·57	635,653	62·73	246,414	65·96
Under Real Property Act...	373,318	34·43	377,681	37·27	127,148	34·04
TOTAL.....	1,084,400	100·00	1,013,334	100·00	373,562	100·00

CHAPTER XII.

Finance.

THE tables as grouped under this Part are intended to give a clear and comprehensive view of the Finances of the Government of the Colony, whether General or Local, and for convenience they have also been arranged according to the following subdivisions :—

I. Finances relating to General Government.
II. Finances relating to Local Government.
III. Finances relating to General, Local, and Imperial Government.

The first subdivision relates chiefly to Treasury and Departmental Receipts and Expenditure in connection with general purposes; the second subdivision relates to the Revenue and Expenditure of local bodies such as Road Trusts, Municipalities, Marine Boards, and such like, which have the power to levy taxes for local purposes; and the third subdivision deals with the aggregates of such matters as are common to both General and Local Government. It is requisite that the matters relating to General and Local Government should be studied together, inasmuch as certain functions of the State are at one time placed under the control of the General Government, and at another time these same functions may be distributed under the control of several local bodies. In the Australasian Colonies, too, for the most part, certain functions, such as the construction and maintenance of railways, are managed by the State. In other countries these functions are carried out only to a limited extent by the General Government, or they may be left altogether to private enterprise, as is the case in England. In comparisons made at different times, and with different countries, it is necessary to have these considerations exactly determined.

1. Finances relating to General Government.

There has been considerable difficulty in dealing with the financial statement in respect of any one year until a period of one clear year had elapsed after the close of the nominal period. This was especially the case in respect of Expenditure, because until recently the law determined that all moneys provided and authorised to be expended in respect of any one year should be actually drawn upon up to the 31st December of the following year, and charged to the account of the year in which the particular expenditure was authorised, and not against the year in which they were disbursed by the Treasury. In the amended law, framed during the Session 1886, all votes in respect of any financial year, if not appropriated within two months after its close, lapse. Receipts and expenditure in connection with Loans Accounts are final, as the moneys are taken to account according to the actual date of Treasury receipts and disbursements.

Finance Account (made up to 6th August, 1890).

The following is an abstract of the Honorable the Treasurer's "Explanatory Statement," presented to Parliament on 6th August, 1890 :—

		Surplus. £	Deficiency. £
Aggregate deficiency, 1st Jan., 1889.....		...	164,609
Year ending 31*st Dec.*, 1889.			
Revenue.....	£677,252	...	...
Expenditure	680,112	...	2860
Aggregate deficiency, 1st January, 1890.....		...	167,469
Year 1890.			
Estimated Revenue.....	£736,516	...	...
Estimated Expenditure.....	702,760	33,756	...
Year 1891.			
Estimated Revenue	£808,346	15,140	...
Estimated Expenditure	793,206	...	...
		48,896	167,469
Estimated result on 31st December, 1891.....	...	...	£118,573

From this statement it also appears that during the year 1890 the Revenue has shown such a marked improvement as compared with the last two or three years that the Treasurer has been enabled to anticipate that the Revenue will exceed Expenditure by £33,756, and for the year 1891 it is also anticipated that the Revenue will exceed Expenditure by £15,140.

If these estimates are realised, the deficiency of £164,000 commencing the year 1889 will be reduced by £46,036, or to a sum of £118,573.

The causes affecting the Finances of the Colony are more fully dealt with in the following analyses :—

General Revenue.

The General Revenue for the year 1889, including Scab Act Fund, amounts to £678,909. This sum shows an increase as compared with the previous year of £38,841, but falls below the actual expenditure of the year by £2775.

The following table shows more particularly the sources of Revenue, together with comparisons under each principal head with the preceding year and with the last year of the decade :—

SOURCES OF REVENUE.	1889.	1888.	1880.	Year 1889 as compared with—			
				1888.		1880.	
				Increase.	Decrease.	Increase.	Decrease.
	NUMERICAL.						
Taxation.	£	£	£	£	£	£	£
Customs	307,352	297,912	217,717	9440	...	89,635	...
Beer, Land, and Dividend Taxes	67,632	58,834	42,631	8798	...	25,001	...
Other Taxes	47,659	49,061	39,893	...	1402	7766	...
Total Taxation	422,643	405,807	300,241	16,836	...	122,402	...
Special Public Services.							
Railways, Post Office, Telegraphs, &c.	148,141	134,602	63,705	13,539	...	84,436	...
From Buildings, Land, and Public Investments.							
Rents, Sales, &c.	95,254	85,377	56,312	9877	...	38,942	...
From other sources.							
Miscellaneous	12,871	14,282	21,900	...	1411	...	9029
Total Revenue	678,909	640,068	442,158	38,841	...	236,751	...
Taxation	62·25	63·40	67·90	4·15	...	40·77	...
Special Public Services	21·82	21·03	14·41	10·06	...	132·54	...
From Buildings, Land, and Public Investments	14·03	13·34	12·74	11·57	...	69·15	...
From other sources	1·90	2·23	4·95	...	10·96	...	70·15
	100·00	100·00	100·00	6·07	...	53·54	...

In order that a clearer insight may be obtained as regards the various items affecting the principal sources of Revenue, the following comparative table has been prepared :—

IMPORTS and Duties collected 1888 and 1889 compared.

	IMPORTS (value).			DUTY COLLECTED.		
	1889.	1888.	1889. +Increase. —Decrease.	1889.	1888.	1889. + Increase. — Decrease.
	£	£	£	£	£	£
Machines, Tools, and Implements	174,599	166,814	+ 7785	12,337	13,168	— 831
Other Art and Mechanic Products	158,616	143,008	+ 15,608	17,179	13,605	+ 3574
Textile Fabrics and Dress	473,797	469,292	+ 4505	54,255	50,787	+ 3468
Drink	54,133	55,391	— 1258	72,560	70,409	+ 2151
Tobacco	26,639	24,507	+ 2132	44,994	43,722	+ 1272
Tea and other Stimulants	69,177	70,858	— 1681	17,679	19,412	— 1733
Sugar and other Food Products	222,938	247,123	— 24,185	57,769	60,271	— 2502
Minerals and Metals	154,539	135,733	+ 18,806	8292	6951	+ 1341
Raw Products, Animal & Vegetable	101,983	90,580	+ 11,403	19,685	18,365	+ 1320
Live Stock	96,906	113,042	— 16,136	...	...	...
Miscellaneous	77,708	94,316	— 16,608	5012	5112	— 100
	1,611,035	1,610,664	+ 371	309,762*	301,802†	+7960‡

* Less Drawbacks, £307,352. † Less Drawbacks, £297,912. ‡ Increase, excluding Drawbacks, £9440.

As compared with the previous year, there is an improvement under the following heads, viz.:—Minerals and Metals, £18,806; other Art and Mechanic Products, £15,608; Raw Products, Animal and Vegetable, £11,403; Textile Fabrics and Dress, £4505; Tobacco, £2132; Machines, Tools, and Implements, £7785. Revenue under the following heads shows a falling off, viz.:—Miscellaneous, £16,608; Live Stock, £16,136; Sugar and other Food Products, £24,185; Tea and other Stimulants, £1681; Drinks, £1258.

If attention be confined to Taxation *per se*, it will be seen that in the Australasian Colonies the greater portion (75·80 per cent.) is raised by way of Customs. The order of Colonies deriving the higher proportion of taxation from Customs is as follows:—

	Percentage of Taxation derived from Customs.			
	1886.	**1887.**	**1888.**	**1889.**
1. Victoria	79·21	77·83	76·62	95·15
2. Queensland	80·69	81·08	85·22	88·67
3. Western Australia	88·68	90·50	88·39	88·54
4. South Australia	74·54	72·13	72·18	74·42
5. Tasmania	74·37	72·98	73·37	72·72
6. New South Wales	76·09	75·50	70·21	71·19
7. New Zealand	67·07	67·86	68·45	70·49

It must be borne in mind, however, that in the Colonies there are few local distilleries, and hence it is that the proportion of revenue from Customs is unusually large as compared with countries whose revenue from spirits is principally derived by way of excise duty. The proportion of revenue derived from imported drink represents 23·42 per cent. of the Customs Revenue in Tasmania.

The Customs alone during the year 1889 contributed £307,352, or 45·27 per cent. of the total Revenue, as compared with £297,912, or 46·54 per cent., during 1888. The following table shows, for the years 1886 and 1889, to what extent the various classes of goods imported contributed towards the Customs revenue in Tasmania:—

	Per cent. to Total Customs.			
	1886.	**1887.**	**1888.**	**1889.**
Class I. Art and Mechanic Productions	10·04	9·08	8·87	9·53
Class II. Textile Fabrics and Dress	18·87	15·58	16·82	17·51
Class III. Food, Drinks, &c.	59·76	63·79	64·22	62·31
Class IV. Animal and Vegetable Substances	7·10	7·20	6·09	6·35
Class V. Minerals and Metals	2·65	2·74	2·30	2·68
Class VI. Live Animals and Plants	—	—	—	—
Class VII. Miscellaneous and Indefinite	1·58	1·61	1·70	1·62
	100·00	100·00	100·00	100·00

Thus, Food, Drinks, and Textile Fabrics together contribute more than three-fourths—79·82 per cent.—of the whole revenue from Customs.

If we examine more closely the orders or subdivisions of classes of goods according to their importance as sources of revenue, we obtain the following result:—

ORDER of Subdivisions of Classes according to their importance as sources of Revenue.

	Per cent. to Total Customs Revenue.			
	1886.	**1887.**	**1888.**	**1889.**
1. Drink	22·49	23·45	23·36	23·42
2. Vegetable Food, including Sugar	18·87	18·46	18·48	18·65
3. Textile Fabrics and Dress	15·97	15·58	16·82	17·51
4. Tobacco	14·37	14·35	14·51	14·54
5. Stimulants not otherwise mentioned	6·72	7·22	6·44	5·70
6. Machines, Tools, Implements, &c	4·79	4·27	4·37	3·98
7. Oils	2·88	2·99	3·30	3·34
8. Vegetable Substances, Raw Materials	2·71	2·69	1·68	2·35
9. Chemicals—includes Matches, Paints, &c.	1·93	1·95	1·88	2·32
10. Metals, other than Gold and Silver	0·05	0·08	0·10	—
11. All other articles	9·22	8·96	9·06	8·19
	100·00	100·00	100·00	100·00

The order of the greatest tax, relative to value, of 20 of the most highly taxed articles is given, as regards the year 1889, as follows: the figures for 1886, 1887, 1888 are also given for comparison.

	1886.	**1887.**	**1888.**	**1889.**
1. Tobacco	173·71	204·33	178·41	168·90
2. Drink	131·42	108·24	127·11	134·04
3. Oils	60·81	70·79	55·54	60·48
4. Vegetable Food, including Sugar	28·04	24·94	26·54	27·35
5. Various Stimulants, including Tea	33·01	35·49	27·39	25·56
6. Arms, Ammunition	31·39	27·03	15·68	23·34
7. Mean Value of all Articles	15·95	17·68	18·74	19·23
8. Building Materials	13·23	12·53	12·33	16·11
9. Gold, Silver, Specie, and Precious Stones	12·94	11·00	6·75	15·19
10. Animal Substances not Food	21·37	23·69	18·50	14·88
11. Stone, Clay, and Earthenware	14·01	14·98	13·65	13·99
12. Tackle for Sports and Games	9·92	10·00	10·62	12·48
13. Cotton and Flax Manufactures	10·04	10·00	11·35	12·47
14. Chemicals	9·42	8·72	10·07	12·43
15. Musical Instruments	9·30	9·19	11·30	11·86
16. Furniture	10·00	10·33	11·34	11·81
17. Textile Fabrics and Dress	9·71	9·72	10·82	11·45
18. Carriages, Harness, &c	10·50	10·66	13·34	10·68
19. Vegetable Substances not Food	11·46	11·11	9·27	10·25
20. Machines, Tools, and Implements	8·75	8·05	7·89	7·07

This method of analysis is not only valuable in disclosing the percentage which duty bears to the absolute value of each article taxed, but changes of tariffs and their effects are also most clearly ascertained in this way.

It will be observed in the analysis of the last three tables that, as regards the year 1889, the relative order and extent of each particular article, class, or sub-class have not been materially disturbed as compared with the previous year. Drink still contributes the highest percentage (23·42) of the Customs Revenue, while tobacco still maintains its position in being the most highly taxed of all imports relative to import value, viz., (168·90) per cent. As regards the last table, it may be observed that the inclusion of articles free of duty in the import values explains the variations from nominal fixed rates of duty within certain divisions.

General Expenditure.

The General Expenditure on account of the year 1889 made up to 28th February, 1890, including Interest on Loans, amounts to £681,674,* or a sum equal to £4 11*s.* 7*d.* per head of population. In order that the proportion of the expense of each separate function discharged by the General Government should be properly estimated, it is necessary to distribute the yearly interest paid on Loans against each function according to the extent and the direction in which the proceeds of the various Loans were applied. This has been carried out in Abstract of Expenditure, a synopsis of which is here given:—

GENERAL Expenditure, 1889.

	1889.					1888.
	EXPENDITURE.		TOTAL.	Per cent. to Total.	Amount per Head.†	Amount per Head.†
	Direct Charges.	Interest on Loans.				
	£	£	£		*s.*	*s.*
General Administration	69,790	...	69,790	10·24	9·38	10·41
Law and Protection	67,931	4971	72,902	10·70	9·80	10·63
Religion, Science, and Education	41,192	9124	50,316	7·38	6·76	6·76
Hospitals, Charitable Institutions, &c.	55,602	...	55,602	8·15	7·47	8·16
Special Public Works and Services—						
Railways (construction & maintenance)	88,568	84,000	172,568	25·31	23·19	22·87
Post Office (ditto)	44,319	...	44,319	6·50	5·96	5·91
Telegraphs (ditto)	20,996	4111	25,107	3·68	3·37	3·40
Scab Inspection	1562	...	1562	·23	·21	·22
Lands, Mines, Works, Surveys, and control	25,379	...	25,379	3·72	3·41	4·15
Roads, Bridges, Buildings construction	50,903	79,763	130,666	19·17	17·50	21·03
Immigration	113	9732	9845	1·45	1·32	1·39
Various Special Services	5579	18,037	23,616	3·47	3·17	3·40
Total Special Public Works and Services	237,422	195,642	433,064	63·53	58·20	62·37
Grand Total	471,937	209,737	681.674	100·00	91·61	98·33

* The estimated outstanding expenditure in each year may be slightly under or over-stated, but in any case the comparisons are not materially affected.

† Including the proportion chargeable for interest on Loans.

It would appear from this table that the order of the more costly functions of the General Government for the year 1889 are as shown hereafter. The corresponding figures for 1888 and 1889 are also given for purposes of comparison :—

	Per cent. to Total Expenditure.		
	1889.	**1888.**	**1887.**
1. Special Public Works	63·53	63·43	63·19
2. Law and Protection	10·70	10·82	10·72
3. General Administration	10·24	10·58	10·07
4. Hospitals, Charitable Institutions, &c.	8·15	8·30	9·14
5. Religion, Science, and Education	7·38	6·87	6·88

With regard to the first item, it is desirable to point out that the revenue derived from Public Services should be placed as a set-off against the expenditure under this head, the amount of which for 1889—£148,141—would materially reduce the relative cost of Special Public Works and Services. For example: although the service for Railways, Telegraphs, and Post Offices for the year costs a sum equal to £1 12*s.* 1*d.* per head of population, or 35·49 per cent. of the total expenditure for the year, yet the revenue from these sources is gradually increasing, and for the year 1889 represented 17·72*s.* per head of population,—*i.e.*, already it amounts to 54·46 per cent. of the total expenditure in connection with such services.

The information necessary for distributing the interest on loans prior to 1882 is not available, and the comparison with former years is based upon the classification which regards interest as a separate item of expenditure, irrespective of the functions or service against which it more properly belongs as a charge.

Accordingly, the following synopsis shows the expenditure for the year 1889 under various heads, in comparison with the years 1880 and 1888 :—

EXPENDITURE, 1889, 1888, and 1880, compared.

NUMERICAL.

	Expenditure.			**1889.** Increase or Decrease as compared with—	
	1889.	**1888.**	**1880.**	**1888.**	**1880.**
	£	£	£	£	£
General Administration *	69,790	75,103	47,003	— 5313	+ 22,787
Law and Protection *	67,931	72,483	51,605	— 4551	+ 16,326
Religion, Education, and Science	41,192	40,258	25,468	+ 934	+ 15,724
Hospitals, Charitable Institutions, &c.	55,602	58,880	45,657	— 3278	+ 9945
Special Public Works and Services *	237,422	278,150	147,861	— 40,728	+ 89,561
Interest	209,737	184,613	97,602	+ 25,124	+ 112,135
TOTAL	681,674	709,486	415,196	— 27,812	+ 266,478
	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
Per head	4 11 7	4 18 4	3 13 1	— 0 6 9	+ 0 18 6

* Owing to the mode of distributing miscellaneous expenditure prior to 1882, the figures for 1880, under General Administration and Law and Protection, are relieved of certain charges, while the converse of this applies to Special Public Works and Services for the same year. The differences, however, are not material as regards comparison.

EXPENDITURE, 1889, 1888, and 1880, compared—*continued.*

CENTESIMAL.

	Expenditure.			1889. Increase or Decrease as compared with—	
	1889.	1888.	1880.	1888.	1880.
General Administration *	10·25	10·59	11·32	— 7·61	+ 48·48
Law and Protection *	9·96	10·22	12·43	— 6·70	+ 31·64
Religion, Education, and Science	6·04	5·67	6·13	+ 2·32	+ 61·74
Hospitals, Charitable Institutions, &c.	8·15	8·30	11·00	— 5·90	+ 21·78
Special Public Works & Services*	34·83	39·20	35·61	— 17·15	+ 60·57
Interest	30·77	26·02	23·51	+ 11·98	+ 114·89
TOTAL	100·00	100·00	100·00	— 4·08	+ 64·18
General Expenditure per head	...	...	...	— 7·37	+ 25·31

* Owing to the mode of distributing miscellaneous expenditure prior to 1882, the figures for 1880, under General Administration and Law and Protection, are relieved of certain charges, while the converse of this applies to Special Public Works and Services for the same year. The differences, however, are not material as regards comparison.

It will be observed that the General Expenditure of 1889 is less than that of the previous year by £27,812, or 4·08 per cent., and it exceeds that of 1880 by £266,478, or 64·18 per cent.

Balance of Revenue and Expenditure.

The total General Revenue for the year 1889 as estimated on 29th February, 1890, is less than the total General Expenditure by £2765. The following table shows the relation of General Revenue to General Expenditure during the last decade:—

	Revenue.	Expenditure.	Net Excess of Revenue above Expenditure.	Net Excess of Expenditure above Revenue.
	£	£	£	£
1879	375,570	481,216	...	105,646
1880	442,158	415,196	26,962	...
1881	505,006	463,684	41,322	...
1882	550,765	500,801	49,964	...
1883	562,066	533,330	28,736	...
1884	549,741	577,876	...	28,135
1885	571,397	585,767	...	14,370
1886	568,924	584,756	...	15,832
1887	594,976	668,759	...	73,783
1888	640,068	709,486	...	69,418
1889	678,909	681,674	...	2,765
	6,039,580	6,202,545	...	162,965
	Treasurer's Estimates.			
1890	736,516	702,760	33,756	...
1891	808,346	793,206	15,140	...
Aggregate 13 years.	7,584,442	7,698,511	...	114,069

A glance at these figures shows that although there is a steady upward progress in Revenue and Expenditure, the latter has somewhat exceeded the former since the year 1883. It is pleasing to be able to state, however, that in the year 1890 the Revenue has shown a decided improvement. As it is important that the causes affecting Revenue should be closely examined, I have prepared the following analytical Tables:—

REVENUE per Head of Population, 1883–1889.

	Per Head of Population.						
	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Taxation—	*s.*	*s.*	*s.*	*s.*	*s.*	*s.*	*s.*
Customs	47·80	39·06	41·28	40·78	38·47	41·29	41·31
Beer, Land, and Dividend Taxes	7·88	6·74	13·45	8·13	8·16	8·15	9·07
Other Taxes	6·79	6·93		5·93	6·08	6·80	6·42
Total Taxation	62·47	52·73	54·73	54·84	52·71	56·24	56·80
Special Public Services—							
Railways, Post Office, Telegraphs, &c.	12·36	14·30	15·01	15·56	16·60	18·65	19·91
From Buildings, Land, and Public Investments—							
Rent, Sales, &c.	12·78	15·14	13·52	11·71	12·27	11·83	12·80
From other sources—							
Miscellaneous	2·21	1·98	2·14	1·86	1·94	1·98	1·73
Total Revenue	90·42	84·15	85·42	83·97	83·52	88·70	91·24
Total Expenditure	85·75	90·07	88·75	86·25	93·87	98·33	91·61

Expenditure per Head of Population, 1882–1889.

	Per Head of Population.							
	1882.	**1883.**	**1884.**	**1885.**	**1886.**	**1887.**	**1888.**	**1889.**
	s.	*s.*	*s.*	*s.*	*s.*	*s.*	*s.*	*s.*
General Administration	9·53	9·44	9·43	9·46	9·83	9·45	10·41	9·38
Law and Protection	9·31	10·28	10·01	10·46	10·00	10·06	10·63	9·80
Religion, Science, and Education	5·88	6·21	6·05	6·32	6·12	6·45	6·76	6·76
Charities, Hospitals, &c.	7·67	7·71	8·44	7·77	7·79	8·57	8·16	7·47
	32·39	33·64	33·93	34·01	33·74	34·53	35·96	33·41
Railways, Public Works, Roads, &c.	48·43	47·59	51·95	52·50	52·57	59·34	62·37	55·03
Miscellaneous	2·48	4·50	3·60	1·05	...	...	...	3·17
	50·91	52·09	55·55	53·55	52·57	59·34	62·37	58·20
Total Expenditure (including Interest)	83·30	85·73	89·48	87·56	86·31	93·87	98·33	91·61
Interest (alone)	17·19	...	...	...	...	25·62	...	...

	Population.							
Population	122,479	126,220	130,541	133,791	137,211	142,478	146,149	151,480
Ditto per square mile	4·67	4·81	4·98	5·10	5·23	5·43	5·57	5·78

FURTHER Analyses of Revenue and Expenditure items for the Years 1882 to 1889.

REVENUE.

		1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Customs Revenue	£	288,523	297,175	254,946	276,100	276,265	274,065	297,912	307,352
Ditto per-centage relative to Total Imports value		17·55	16·52	15·86	15·99	15·95	17·68	18·74	19·23
Ditto per-centage Total Revenue		52·35	52·86	46·42	48·32	48·56	46·06	46·54	45·27
Ditto per head of Population	*s.*	47·81	47·80	39·06	41·28	40·78	38·47	41·29	41·31
Ditto per cent. to Total Taxation		77·80	73·07	74·07	75·41	74·37	72·99	73·41	72·72
Total Revenue	£	550,765	562,066	549,741	571,412	568,924	594,976	640,068	678,909
Ditto per head of Population	*s.*	91·33	90·42	84·15	85·42	83·97	83·52	88·70	91·24
Total Taxation	£	370,856	388,407	344,192	366,118	371,545	375,501	405,807	422,643
Ditto per head of Population	*s.*	61·45	62·47	52·73	54·73	54·84	52·71	56·24	56·80
Ditto per-centage to Total Revenue		67·33	69·11	62·61	64·07	65·31	63·11	63·40	62·25

POPULATION, Revenue, and Expenditure, 1883 and 1889.

	1883.	1889.	Increase.	
	£	£	£	per cent.
Revenue	562,066	678,909	116,843	20·78
Expenditure	533,330	681,674	148,344	27·82
Interest on Loans	113,959	209,737	95,778	84·05
Customs	297,175	307,352	10,177	3·42
All Taxes (General)	388,407	422,643	34,236	8·81
Population	126,220	151,480	25,260	20·01

The broad facts of the relation between Revenue, Expenditure, and Population are best appreciated by contrasting the years 1883 and 1889. In this interval—

The Total Revenue has increased by	£116,243, or 20·78	per cent.
Customs have increased by	£10,177, or 3·42	,,
All Taxes have increased absolutely by	£34,236, or 8·81	,,
All Taxes have decreased relatively by	5·67*s.* per head, or 9·08	,,
Population has increased by	25,260, or 20·01	,,
Total Expenditure has increased by	£148,344, or 27·82	,,
Interest on Loans has increased by	£95,778, or 84·05	,,

Thus, we perceive that the rate of increase in Revenue is nearly equal to that of Population, while the rate of increase in Expenditure as a whole is 7·81 per cent. *above* that of Population; it follows, therefore, while the *Revenue per head* of population has risen from 90·42*s.* to 91·24*s.*, equivalent to 0·82*s.* increase per head, Expenditure per head has risen from 85·73*s.* to 91·61*s.*, equivalent to 5·88*s.* increase. If the taxation rate per head of 1883 had been maintained in 1889 the

Revenue in the latter year would have amounted to	£721,854
and the Expenditure being	681,674
would leave a surplus of	40,180
As it is, the Revenue in 1889 stands at	678,909
and Expenditure at	681,674
i.e., lower by	£2765

It would, therefore, only require an additional revenue of 0·37*s.* per head of population to bring it up to the level of Expenditure.

The lower rate per head of Revenue from Customs in the later years as compared with 1883 is no doubt largely owing to important remissions made on Tea and other articles at the close of the year 1883; but concurrently with this there has been a gradual decline in the consumption of foreign spirits, the latter falling from 815 gallons per 1000 persons per year in 1881–1882 to 646 gallons per 1000 in the last two or three years. This diminution, however pleasing, as it is, as an index of the improved habits of the people, is a serious matter as touching the Revenue.

Thus it has been clearly demonstrated that if the Customs in 1889 yielded as much per head as they did in 1883, there would have been a considerable surplus instead of a small deficiency in the later year.

Revenue and Expenditure.

If we now closely examine the figures relating to Expenditure we find that nearly the whole of the increased Expenditure between 1883 and 1889, amounting to £148,344, is due to the large increment to interest on loans and other expenses in connection with new Railways and Public Works. Although the work of the General Administration and other Public Departments has also increased during these six years, it has not caused any material addition to the General Expenditure, and relatively, to Population, it actually shows a decrease, as may be seen from the following table; thus:—

Cost per Head.

	1883.	1889.	1889.	
			Increase.	Decrease.
General Administration..... *s.*	9·44	9·38	...	·06
Law, Protection, Education, Charities, and Hospitals..... *s.*	24·20	24·03	...	·17
Railways, Roads, & Public Works *s.*	52·09	58·20	6·11	...
Total Cost..... *s.*	85·73	91·61	5·88	...

It appears that the 5·88*s.* forming the increase per head is mainly due to the interest on loans for Public Works, while the Departments connected with the General Administration of Government have decreased 0·23*s.* per head.

Sources of Revenue in Australasian Colonies.

The proportions which the several sources of income have contributed to the Total Revenue in different Colonies are shown as follows:—

Sources of Revenue in the various Colonies of Australasia during the Year 1889 compared.

Numerical.

Colony.	Raised by Taxation.		Raised by Sales and Rental of Crown Lands.		Railway Receipts & other Sources of Revenue.	Total Revenue.	Total Revenue per Head of mean Population.
	From Customs.	Other Taxes.	Sales.	Rental.			
1889.	£	£	£	£	£	£	£ s. d.
Victoria	2,879,830	869,840	494,733	121,295	4,310,292	8,675,990	7 17 2
New South Wales	1,905,883	771,286	1,149,171	988,392	4,248,665	9,063,397	8 4 2
Queensland	1,344,472	171,752	304,676	344,112	1,275,237	3,440,249	8 13 3
South Australia	529,433	181,815	53,570	120,676	1,384,939	2,270,433	7 1 3
Western Australia	171,990	22,258	9518	77,498	161,461	442,725	10 5 8
Tasmania	307,352	115,291	49,166	21,725	185,375	678,909	4 11 2
New Zealand	1,473,379	616,956	91,627	208,614	1,601,343	3,991,919	6 10 1
Total Australasian Colonies	8,612,339	2,749,198	2,152,461	1,882,312	13,167,312	28,563,622	7 13 1

Centesimal.

Colony.	Proportion of Taxation raised by Customs.	Raised by Taxat ı		Raised by Sales and Rental of Crown Lands.		Railway Receipts and other Sources of Revenue.	Total.
		From Customs.	Other Taxes.	Sales.	Rental.		
1889.							
Victoria	95·15	33·19	10·03	5·70	1·40	49·68	100·00
New South Wales	71·19	21·03	8·51	12·68	10·90	46·88	100·00
Queensland	88·67	39·08	4·99	8·86	10·00	37·07	100·00
South Australia	74·42	23·32	8·01	2·35	5·32	61·00	100·00
Western Australia	88·54	38·85	5·03	2·15	17·50	36·47	100·00
Tasmania	72·72	41·31	15·49	6·61	2·92	33·67	100·00
New Zealand	70·49	36·91	15·46	2·30	5·22	40·11	100·00
Total Australasian Colonies	75·80	30·15	9·62	7·54	6·59	46·10	100·00

These tables are of much interest, as they show the varying resources of each Colony. It will also be apparent that the proportion of revenue in each Colony raised by means of taxation is only to a limited extent a matter of policy or choice; and so long as the revenues derivable from the profits of railways, and especially revenues from the alienation and rental of Crown lands, differ to such a remarkable extent as they now do in each Colony, so long must there be a corresponding difference in the proportion of revenue derived from taxation, whether direct or indirect.

This is made more manifest by the following abstract, showing that where the revenues derived from lands, railways, &c. are comparatively high, the revenues from taxation, as a rule, are comparatively low :—

REVENUE raised per Head of Population (1889).

	From Lands, Railways, &c.			From Taxation.		
	£	*s.*	*d.*	£	*s.*	*d.*
New South Wales	5	15	9	2	8	6
Queensland	4	16	11	3	16	4
Western Australia	5	15	5	4	10	3
South Australia	4	16	9	2	4	6
Victoria	4	9	3	3	7	10
New Zealand	3	1	11	3	8	1
Tasmania	1	14	5	2	16	10
Total	4	5	11	2	16	4

Thus, it is somewhat surprising to find that Tasmania's taxation, *per head*, is so low, seeing how small an amount (£1 14*s.* 5*d.*) per head she derives from other sources of revenue.

Relative Cost of Government in Australian Colonies.

It has been shown that the cost of the General Government of Tasmania amounts to £681,674 for 1889, or £4 11*s.* 7*d.* per head of total population, and that fully 65 per cent. of this sum is due to Interest on Loans and maintenance of Roads, Railways, Post Offices, and Telegraphs throughout an area of 26,215 square miles. It is evident, therefore, that any comparison with the cost of government of a similar population aggregated together within *one square mile* of land, as in the local government of towns in thickly-populated European centres, must be utterly misleading in any enquiry as to relative economy. Centralisation of people within a small area, as in towns, certainly increases the cost of government relative to *area*, but the most extravagantly managed city, if measured *per head of population*, must of necessity compare favourably with a sparsely populated colony containing the same population, as its expenditure is rather related to extent of land than to numbers of people. Centres for schools, railway stations, post and telegraph offices and such like; roads, jetties, bridges, railways, &c. are determined by area in young countries; and the offices must be multiplied and the mileage of roads increased, independently of obvious but irrelevant considerations that within a single square mile in certain countries a larger population with larger traffic requires fewer independent offices, and but a fraction of the mileage of the roads and railways necessary for the development of large areas of land and the establishing of the *nuclei* of the towns and cities of the future.

The only true way in which the relative economy of any Colony can be measured is by contrasting its cost of Government with other countries similarly conditioned. This is a difficult matter, because, although the various Australian Colonies are similar to each other as regards the functions taken up by the General Government, there are no two exactly alike as regards the area or density of population. The greatest part of the territory of the two largest Colonies (Western Australia and South Australia) is a *terra incognita*, and cannot be said to be governed in any sense so far as cost of government is concerned.

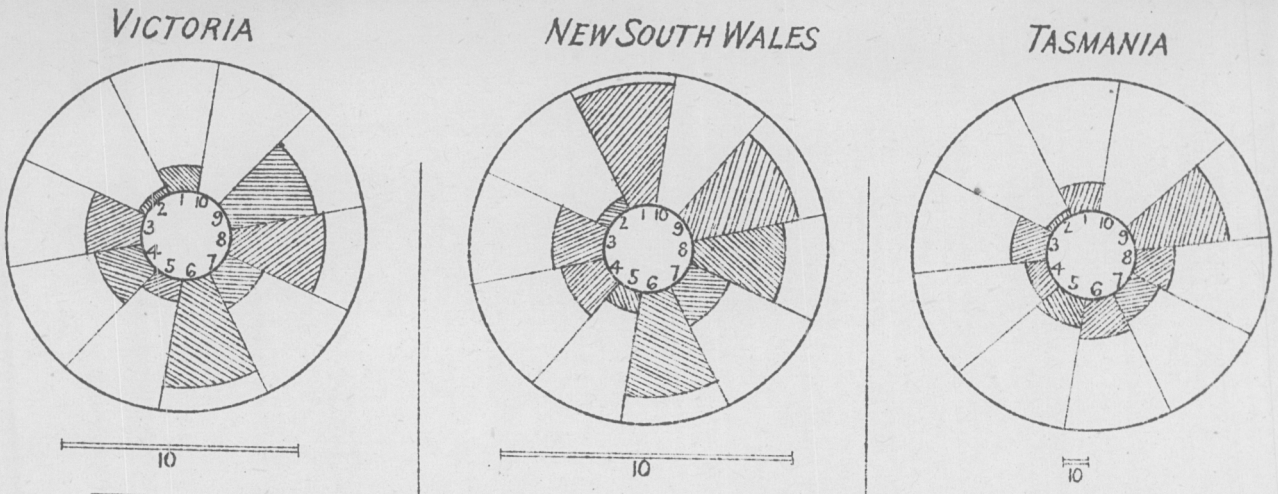
The differences referred to are best appreciated by taking Tasmania as the unit for the comparison of relative extent of area, and by measuring the relative stages of development in each Colony by the density of population, railways (open), &c., per square mile; thus—beginning with the highest:—

Size of Colonies, taking Tasmania as the unit.		Stage of Development measured by Density of Population, &c., 1889.			
			Per Square Mile.		Per 10,000 sq. miles.
			Population.	Export Domestic Products.	Railways.
All Australasian Colonies	120½			£	miles.
1. Western Australia	40	1. Victoria	12·72	111·25	330
2. South Australia	34	2. New Zealand	5·94	86·55	195
3. Queensland	25½	3. Tasmania	5·78	55·03	180
4. New South Wales	12	4. New South Wales	3·61	56·08	72
5. New Zealand	4	5. Queensland	·61	11·24	39
6. Victoria	3½	6. South Australia	·35	4·09	28
7. Tasmania	1	7. Western Australia	·04	·71	8
		All Australasian Colonies.	1·20	15·70	41

The aggregates of Colonies, *per se*, whether as regards cost of government, trade, or population, can afford no clue to relative economy, the present stage of development, or to rate of progress made from year to year. When their respective areas differ as they do in the proportions of between 1 and 40, nothing can be more fallacious or misleading than to pursue investigations relating to causes or rates of developmental progress without first reckoning how far extent of area alone may be considered as one of the principal determining causes. This subject is more fully discussed hereafter, but it is evident that comparisons based upon *aggregates* are altogether unscientific under such circumstances. Between each Colony the only true test for determining relative developmental progress and relative cost of Government should be based upon common factors: and the best for such purposes would undoubtedly be on the basis of *per square mile of territory* for the former and *per head of population* for the latter.

As the relative cost of Government in each Colony is a matter of the greatest importance, the following table has been carefully prepared, showing the cost of Government in each of the Colonies of Australia

RELATIVE COST OF GOVERNMENT IN VARIOUS COLONIES



COST PER HEAD (1) General Government (2) Customs and Excise (3) Law and Protection (4) Religion and Science (5) Hospitals Charities &c (6) Railways (7) Post and Telegraph (8) Other Public Works (9) Interest on debt (10) Relative absolute cost.

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and Tasmania, under each of the great divisions of expense common to them all. The fact that Tasmania, relatively, takes the second position—that is, next to Victoria—in the extent to which artificial provisions have been made to advance the development of its territory, is in itself a good index that the cost per head fairly indicates the relative economy shown in the Government of each Colony compared. A diagram has also been prepared showing to the eye the relative cost of each great subdivision. In no other way can the differences be so readily perceived in each of the great divisions forming the chief items of expense in the development of young countries.

COST of Government in the Colonies of Australia and Tasmania compared, 1888-1889.

	ACTUAL.						PER HEAD.					
	Tasmania, 1889.	N. S. Wales, 1889.	Victoria, 1888-9.	Queensland, 1887-8.	S. Australia, 1889.	W. Australia, 1889.	Tasmania, 1889.	N. S. Wales, 1889.	Victoria, 1888-9.	Queensland, 1887-8.	S. Australia, 1889.	W. Australia, 1889.
	£	£	£	£	£	£	£	£	£	£	£	£
1. General Government	61,167	2,091,618	410,923	170,175	142,925	47,086	·41	1·89	·37	·45	·44	1·09
2. Customs and Excise	8623	63,152	122,007	54,983	21,712	7718	·06	·06	·11	·15	·07	·18
3. Law and Protection	67,931	806,307	891,295	358,793	184,269	72,322	·46	·73	·81	·95	·58	1·68
4. Religion, Science, and Education	41,192	706,249	774,449	191,132	137,378	16,293	·28	·64	·70	·51	·43	·38
5. Hospitals, Charities, &c.	55,602	250,052	283,986	92,144	89,438	10,211	·37	·23	·26	·24	·28	·24
	234,515	3,917,378	2,482,660	867,227	575,722	153,630	1·58	3·55	2·25	2·30	1·80	3·57
Special Public Works Services.												
6. Railways	88,568	1,755,625	1,803,124	507,961	534,331	63,939	·60	1·59	1·63	1·35	1·67	1·49
7. Post, Telegraphs	65,315	628,183	619,070	310,504	182,242	33,702	·42	·57	·56	·82	·57	·78
8. Public Works and other Services	83,539	1,504,182	1,555,806	666,046	264,641	66,559	·56	1·36	1·41	1·77	·82	1·55
9. Interest on Public Debt	209,737	1,726,325	1,459,242	1,015,667	798,991	68,170	1·42	1·56	1·32	2·69	2·50	1·58
	447,159	5,614,315	5,437,242	2,500,178	1,780,205	232,370	3·00	5·08	4·92	6·63	5·56	5·40
	681,674	9,531,693	7,919,902	3,368,405	2,355,927	386,000	4·58	8·63	7·17	8·93	7·36	8·97

A careful study of these figures and the accompanying diagram reveals curious facts; but, in whatever way we look at them, it is clear that, relative to functions of Government, Tasmania stands out from all in the marvellously low relative cost of her Government. The two great divisions—(1) General Government, including Customs, Law, Police, Education, Hospitals and Charities, &c.; (2) Railways, Telegraphs, Post Offices, Public Works and Interest on Loans, &c.—bring these contrasts still more vividly before the mind; the order of each Colony, beginning with the least costly, standing thus—

ORDER of Colonies—Cost of Government.

(1.) General Government, &c.: Cost per head.	(2.) Railways, Interest on Loans: Cost per head.	Total Expenditure: Cost per head
£	£	£
1. Tasmania ..... 1·58	1. Tasmania ..... 3·00	1. Tasmania ..... 4·58
2. South Australia .. 1·80	2. Victoria ..... 4·92	2. Victoria ..... 7·17
3. Victoria ..... 2·25	3. New South Wales . 5·08	3. South Australia . 7·36
4. Queensland ..... 2·30	4. Western Australia 5·40	4. New South Wales 8·63
5. New South Wales 3·55	5. South Australia ... 5·56	5. Queensland ..... 8·93
6. Western Australia 3·57	6. Queensland ..... 6·63	6. Western Australia 8·97

The fact that Tasmania compares so favourably with all the Colonies may surprise many who have been misled by references to amount of *Taxation per head*. But it is obvious that only a small portion of the revenue of each Colony is raised by taxation; and it is equally obvious that, in many cases, the total yearly revenue is under total yearly expenditure. The total cost of Government can alone be obtained from actual expenditure under the various divisions of expense; and from comparisons made in this way of the relative cost of Government in the Australian Colonies, it has been demonstrated that Tasmania is by far the least costly.

The extent of this lower relative cost is best appreciated by showing what the expenditure of Tasmania would have been in the year 1889 if calculated at the respective *rates per head* of the various Colonies.

	£		£	Excess above Tasmania's Rate. £
1. Thus, if at Tasmania's own rate, viz., £4·58 per head, it would show the actual sum	...	=	681,674	...
2. If at the rate per head of Victoria	7·17	=	1,067,004	385,330
3. Ditto South Australia	7·36	=	1,095,278	413,604
4. Ditto New South Wales	8·63	=	1,284,273	602,599
5. Ditto Queensland	8·93	=	1,328,917	647,243
6. Ditto Western Australia	8·97	=	1,334,870	653,196

Thus, the rate of Victoria, the lowest of the Australian Colonies, would add £385,330, or 56 per cent. of the present expenditure of Tasmania, while the rate of Western Australia, the highest of all, would more than double the present yearly expenditure of Tasmania. The necessary qualification regarding sparsity of population must be reckoned with as regards some of the items of expense before justice would be done to Queensland and Western Australia; but this does not apply

to Victoria, which has the advantage of being the most densely populated of all the Colonies.

Relative Cost of Government in Tasmania in the Years 1880 *and* 1889.

By pursuing the same method of enquiry, the direction in which the Local Cost of Government has increased is also plainly revealed; thus—

Cost of Government in Tasmania per Head.

	Year **1880.**	Year **1889.**	Increase.
	£	£	£
General Government, including Customs, Excise, Law, Police, Defence, Education, Hospitals, Charities, &c.	1·49	1·58	0·9
Special Public Works and Services, including Railways, Roads, Bridges, (not including Loans Expenditure), &c., Post Office, Telegraphs, and Interest on Public Debt	2·16	3·00	0·84
	3·65	4·58	0·93

That is, the relative cost of the Government of the Country has increased 25·48 per cent., or 18*s.* 6*d.* per head, since the year 1880; and of this increase 16*s.* 11*d.* per head, or 91 per cent., of the same is due to the very large amount of Public Works, roads, railways, &c. carried out and maintained, together with the interest on loans expended on the larger works. It is here clearly demonstrated that the cost of the General Government has contributed very little to the increase since the year 1880, and that even the total cost of Government in the year 1889, when compared, is so far below the relative expense of other Australian Governments as to represent a saving in Tasmania of from £385,330 to £653,196 per year.

Loans floated in London.

The following statement shows in chronological order the various Tasmanian Loans floated in London, the prices realised for each, and also the various rates, reduced to a common standard for comparison :—

Act.	Year.	Amount of Loan.	Nominal Rate of Interest.	Gross Amount realised.	Average Amount realised per cent.*	Rate of Interest on Amount realised reduced to equivalent at par.*
		£	£	£	£ *s.* *d.*	£
29 Vict. No. 2	1867-8	102,500	6	96,760	94 11 8	6·23
31 Vict. No. 9	1868	400,000	6	409,872	102 9 4	5·85
Ditto.....	1871	52,800	6	55,888	105 17 0	5·66
33 Vict. No. 38	1870	100,000	6	107,159	107 3 2	5·59
41 Vict. No. 3	1878	300,000	4	277,608	92 10 9	4·32
44 Vict. No. 34	1881	300,000	4	298,765	99 11 9	4·01
46 Vict. No. 45	1883	500,000	4	492,420	98 9 8	4·06
47 Vict. No. 47	1884	800,000	4	803,240	100 8 1	3·98
49 Vict. No. 54	1886	1,000,000	4	998,945	99 17 11	4·00
52 Vict. No. 68	1889	1,000,000	3½	982,855	98 5 8	3·56

* Accrued interest and expenses not deducted.

Thus it is most satisfactory to note that the credit of the Colony has more than kept pace with its general progress. The last Loan was even more satisfactory than is shown by the above comparative figures, for if the necessary qualifications be made for accrued interest, &c. at the time of floating each Loan it will appear that the last Loan has been the most favourable of all; thus :—

Year.	Amount of Loan.	Average gross amount realised per cent.	Expenses per cent.	Accrued Interest per cent.	Net Amount realised per cent. less accrued interest.	Equivalent of Interest at par.
	£	£ s. d.	£ s. d.	£ s. d.	£ s. d.	
1878...	300,000	92 10 9	0 18 7	1 9 3	90 2 11	4·44
1881...	300,000	99 11 9	0 18 11	1 6 11	97 5 11	4·11
1883...	500,000	98 9 8	0 17 9	1 13 11	95 18 0	4·17
1884...	800,000	100 8 1	0 18 3	1 17 1	97 12 9	4·10
1886...	1,000,000	99 17 11	0 18 0	0 11 6	98 8 5	4·06
1889...	1,000,000	98 5 8	1 4 10	0 12 2	96 8 7	3·63

Particulars of last Loan floated in London, on 16th April, 1889.

The last Tasmanian Loan floated in London was the first issue of the Colony's debentures in the form of "Inscribed Stock;" and notwithstanding the hostility of the Tasmanian Main Line Railway Company, who opposed its quotation because of some petty claims then awaiting the judgment of the Supreme Court, the Loan—through the able and energetic management of the Hon. E. N. C. Braddon (Agent-General) and Mr. D. Larnach (of the London and Westminster Bank)—was the most complete financial success hitherto gained by the Colony. The following is a summary of fuller particulars :—

1. Amount floated—£1,000,000, inscribed.
2. Nominal rate of interest fixed—3½ per cent.
3. Minimum price fixed—£97 for every £100, the price including interest from 1st April, 1889.
4. Number of tenders—170.
5. Amount tendered—£2,195,100.
6. Number of successful tenders—98.
7. Highest tender per £100—(92) £100.
8. Lowest successful tender—(6) £97 18*s.* 6*d.*
9. Gross proceeds—£982,855 7*s.* 6*d.*, or £98 5*s.* 8·52*d.* per cent.
10. Accrued interest—£6106 0*s.* 4*d.*, or £0 12*s.* 2·54*d.* per cent.
11. Expenses—£12,438 4*s.* 5*d.*, or £1 4*s.* 10·51*d.* per cent.
12. Gross proceeds (*ex* accrued interest)—£976,749 7*s.* 6*d.*, or £97 13*s.* 5·98*d.* per cent.
13. Net proceeds (*i.e.*, *ex* accrued interest and expenses)—£964,311 2*s.* 9*d.*, or £96 8*s.* 7·47*d.* per cent.

This most favourable result places Tasmania's credit almost upon equality with the two leading Colonies of Australia; thus—

AUSTRALASIAN Loans floated in London, 1888–1890.

	Year.	Loan.	Nominal Rate.	Gross proceeds.	Net Proceeds per £100.	Actual Rate.
		£			£ s. d.	
Victoria	1889	3,000,000	3½	103 6 0	101 11 11½	3·44
New South Wales	1889	3,500,000	3½	102 8 0	99 17 9¼	3·50
Queensland	1888	2,520,100	3½	...	93 7 10¼	3·75
South Australia	1889	1,317,800	3½	100 2 11	98 3 9⅞	3·56
Tasmania	1889	1,000,000	3½	98 5 8	96 8 7	3·63
New Zealand	1889	2,700,000	3½	95 16 8	...	...
Queensland	1890	2,264,000	3½	97 15 7	...	...
W. Australia	1889	100,000	4	108 15 3	...	...

TOTAL Public Debt of Australasia, with Mean actual Rate of Interest.

	31 Dec. Year.	Total Public Debt.	INTEREST ON DEBT.		Debt per Head.
			Current Year.	Mean Actual Rate.	
		£	£		£ s. d.
Western Australia	1889	1,371,981	68,170	4·96	31 7 11
Tasmania	,,	5,019,050	209,737	4·17	33 2 8
Victoria*	,,	37,367,027	1,459,242	4·15	33 8 5
New South Wales	,,	46,646,449	1,805,570	3·93	41 11 4
New Zealand	,,	37,162,891	1,616,501	4·35	59 18 3
South Australia	,,	20,435,500	798,991	4·10	62 19 7
Queensland	,,	25,840,950	1,059,769	4·10	63 10 11
Total Australasia	,,	173,843,848	7,018,180	4·04	45 18 2

* Debt on 30 June, 1889, £37,627,382.

Loans authorised, floated, and expended.

Loans authorised for various purposes.

	1883.	1884.	1885.	1886.	1887.	1888.	1889.	Aggregate. Prior to 1883.	Aggregate. Up to 1889.
Public Works.	£	£	£	£	£	£	£	£	£
Railways	617,000	..	374,300	91,540	..	125,856	187,178	574,000	2,123,402
Telegraphs	3560	..	6500	3500	..	..	8000	75,120	102,471
Roads, Bridges, Harbours, &c.	120,600	..	146,070	69,980	..	124,644	281,066	709,316	1,594,008
Public Buildings	51,500	..	78,150	33,080	..	..	53,739	313,336	568,233
Defences	..	..	40,000	1300	..	..	15,845	58,350	120,868
Other Public Works	7840	..	69,280	2600	..	..	34,172	74,457	139,183
Total Public Works	800,500	..	714,300	201,000	..	250,500	590,000	1,804,579	4,648,165
Other Public Purposes.									
Commutation of State Aid to Religion	..	..	..	..	..	..	..	100,000	100,000
Immigration	..	..	5000	..	..	..	..	230,000	235,714
Miscellaneous	..	180,000	13,750	7220	100,000	60,000	..	247,371	344,591
Total other Public Purposes	..	180,000	18,750	7220	100,000	60,000	..	577,371	680,305
Total authorised	800,500	180,000	733,050	208,220	100,000	310,500	590,000	2,381,950	5,328,470

Money actually raised on Loans.

Public Works.									
Railways	97,621	617,000	45,750	377,700	69,700	130,296	126,967	562,000	2,026,813
Telegraphs	1855	3561	23,640	6500	..	3500	5000	73,220	99,426
Roads, Bridges, and Harbours	116,186	138,800	124,710	132,370	3600	159,224	270,186	543,716	1,490,070
Public Buildings	38,096	65,500	38,700	78,150	20,000	13,080	45,030	255,336	553,621
Defences	15,326	..	..	40,000	..	1300	17,495	41,000	119,995
Other Public Works	39,049	7840	9600	48,125	..	2600	2700	34,457	102,106
Total Public Works	308,133	832,700	222,400	682,845	93,300	310,000	463,305	1,509,729	4,392,031

Other Public Purposes.									
Commutation of State Aid to Religion	..	..	..	..	..	..	..	100,000	100,000
Immigration	29,286	..	..	5000	2900	..	..	197,100	235,000
Miscellaneous	..	..	..	7220	6750	108,550	39,930	147,300	333,071
Total other Public Purposes...	29,286	..	..	12,226	9650	108,550	39,930	544,471	668,071
Total raised	337,429	832,700	222,400	695,065	102,950	418,550	503,235	2,054,200	5,060,102
Loans actually expended.									
Public Works.									
Railways	25,750	205,701	256,372	266,014	197,696	181,102	173,548	553,744	1,859,926
Telegraphs	2604	3798	4086	9027	1921	1968	3518	70,223	97,160
Roads, Bridges, and Harbours	113,104	113,301	115,395	119,008	116,958	165,188	122,911	476,518	1,345,048
Public Buildings	20,385	23,797	49,453	54,409	52,807	45,373	32,664	241,165	520,053
Defences	9550	11,824	14,821	13,129	7262	10,928	7980	35,896	111,391
Other Public Works	333	11,936	20,542	11,674	711	7877	26,418	32,429	109,241
Total Public Works	171,726	370,359	460,669	473,261	377,355	412,436	367,039	1,409,975	4,042,819
Other Public Purposes.									
Commutation of State Aid to Religion	..	..	..	..	..	..	..	100,000	100,000
Immigration	11,703	13,678	4779	3808	2231	..	..	198,800	235,000
Miscellaneous	..	..	..	7220	..	..	..	177,371	184,591
Total other Public Purposes ..	11,703	13,678	4779	11,028	2231	..	..	476,171	519,591
Total expended	183,429	384,037	465,448	484,289	379,586	412,436	367,039	1,886,146	4,562,410
Loans absolutely redeemed, and actual Debt outstanding, on 31st December.									
Moneys actually raised on Loans	337,420	832,700	222,400	695,065	102,950	418,550	503,235	..	5,060,102
Redeemed absolutely	2420	6000	17,700	26,400	20,300	21,700			
Balance of Debt outstanding	2,385,600	3,202,300	3,357,000	4,026,720	4,109,370	4,499,470	5,019,050		

* Amount of Loans actually issued to 31st December, 1889, £5,115,550. Balance unexpended ditto, £497,692.

Tasmanian Debentures redeemable.

RETURN made up to 30th June, 1889, showing Amount falling due in each year, together with the Rates of Interest.

Redeemable Debentures.			Amount of Debentures falling due in each year (1889 to 1940).								
Authority.	Rate of Interest.	Amount.	Year.	In London.	In Hobart.	TOTAL.	Amounts and Rates of Interest.				
							3½ per cent.	4 per cent.	4¾ per cent.	5 per cent.	6 per cent.
	Per cent.	£		£	£	£	£	£	£	£	£
28 Vict. No. 5		2000*	1889...	...	800	800	...	...	...	800	...
29 Vict. No. 2		102,500	1890...	...	60,900	60,900	...	...	3300	48,600*	9000*
29 Vict. No. 3		7000*	1891...	...	65,950	65,950	...	21,000†	4750	40,200*	...
30 Vict. No. 19	6	3100	1892...	12,000	35,400	47,400	...	17,200	200	30,000	...
31 Vict. No. 9		454,500	1893...	102,700	28,800	131,500	...	500	1300	30,000	99,700
32 Vict. No. 30		24,000	1894...	125,850	42,400	168,250	...	2800	40,450	25,000	100,000
33 Vict. No. 38		100,000	1895...	104,500	1400	105,900	...	1400	...	...	104,500
34 Vict. No. 10	5	900	1896...	100,000	...	100,000	...	...	...	...	100,000
	4	15,700	1897...	100,000	...	100,000	...	...	...	...	100,000
36 Vict. No. 3		40,200*	1898...	52,800	3900	56,700	...	3900	...	...	52,800
36 Vict. No. 4	5	60,000	1899...	...	...	...	...	...	...	...	...
36 Vict. No. 9		25,000	1900...	...	31,220	31,220	...	7220	...	...	24,000
38 Vict. No. 24		48,600*	1901...	100,000	...	100,000	...	...	...	...	100,000
41 Vict. No. 3		300,000	1902...	...	31,200	31,200	...	28,100	...	...	3100
44 Vict. No. 34	4	300,000	1903...	...	15,000	15,000	...	15,000	...	...	...
45 Vict. No. 38		102,000†	1904...	...	17,400	17,400	...	17,400	...	...	...
46 Vict. No. 45		545,950	1905...	...	10,500	10,500	...	10,400	...	100	...
"	3½	700	1908...	300,000	...	300,000	...	300,000	...	...	...
47 Vict. No. 47	4	800,000	1911...	1,000,000	...	1,000,000	...	1,000,000	...	...	...
49 Vict. No. 54		1,000,000	1913...	523,750	22,900	546,650	700	545,950	...	...	...
50 Vict. No. 11	4¾	50,000	1914...	800,000	...	800,000	...	800,000	...	...	...
52 Vict. No. 44	4	7220	1920...	300,000	...	300,000	...	300,000	...	...	...
52 Vict. No. 68	3½	1,000,000	1940...	1,000,000	...	1,000,000	1,000,000	...	...	...	...
		4,989,370	...	4,621,600	367,770	4,989,370	1,000,700	3,070,870	50,000	174,700	693,100

Less proportion of earlier Debentures, for which redemption has been provided under 52 Vict. No. 68.....	118,000	...	...	118,000	118,000	...	20,200	...	88,800	9000
	4,871,370	...	4,621,600	249,770	4,871,370	1,000,700	3,050,670	50,000	85,900	684,100
Annual Interest liability ...	...	...	...	...	204,767·3	35,024·5	122,026·8	2375	4295	41,046

Mean rate of interest on actual indebtedness, 4·20 per cent.

* Redemption of this item provided for in 52 Vict. No. 68. † Redemption for £20,200 of this item provided for in 52 Vict. No. 68.

Summary.

	Rate.	Amount.	Per cent. to Total.	Annual liability for Interest.	
		£	per cent.	£	per cent.
Debentures bearing Interest at ...	3½ per cent.	1,000,700	20·55	35,024·5	17·10
Ditto	4 ditto	3,050,670	62·62	122,026·8	59·59
Ditto	4¾ ditto	50,000	1·03	2375	1·16
Ditto	5 ditto	85,900	1·76	4295	2·10
Ditto	6 ditto	684,100	14·04	41,046	20·05
All	4·2035	4,871,370	100·00	204,767·3	100·00

Finances relating to Local Government.

The following Table gives a synopsis of the Receipts and Expenditure of Local Bodies for the year 1889 :—

	No.	Value of Rateable Property.	Revenue.				Expenditure.	Mean Rates levied per £ on Rateable Property
			From Rates, &c.	Government Aid.	Other sources.	TOTAL.		
		£	£	£	£	£	£	*s.* *d.*
Marine Boards[a]	5	—	29,024	13,210	2583[b]	44,817	42,981	—
Municipalities..	21	682,845	66,884	9011	55,657	131,552[d]	139,089[e]	1 11·56
Road & Bridge Trusts.....	97	614,366	15,998	13,318	400	29,716	30,212	0 6·24
Rabbit Trusts..[c]	—	—	—	—	—	—	—	—
Public Cemeteries.....	23	—	—	—	968	968	778	—
Town Boards...	7	12,362	385	—	2000	2385	1985	0 7·47
Water Trusts...	2	—	710	—	33	743	—	—
	155	[f]	113,001	35,539	61,641	210,181	215,045	—

[a] Includes Lighthouses. [b] Received from other Governments. [c] Functions now carried on by General Government. [d] Includes receipts from Loans. [e] Includes repayments of Loans. [f] The same property may be rated both for Municipal and Road Trust purposes.

Thus, the mean Rate levied in Municipalities during 1889 was 1*s.* 11·56*d.* per £ of rateable property, *i.e.*, nearly the same as in the previous year; the mean Road Trust Rate has increased 0·51*d.* per £, *i.e.*, it is equal to 6·24*d.* for 1889. Of the £113,001 mentioned above, only £82,301, raised as rates and dues, can be legitimately included as taxation. The following is a summary of the same :—

	Taxation, Local Government, 1889.	Per Head.
	£	*s.*
Municipalities	50,978	6·85
Marine Boards	14,940	2·01
Road Trusts	15,998	2·15
Town Boards	385	·05
Total Taxation, Local Government	82,301	11·06

The Revenue and Expenditure of Local Government for 1889, less aid from General Government, as compared with the previous year and with the first year of decade, are shown as follows :—

	1889.	1888.	1880.
	£	£	£
Revenue	174,642	156,416	117,383
Expenditure	179,554	178,024	120,915
Municipal Value Rateable Property	682,845	668,752	568,796

Taxation—General and Local.

The total Taxation of the Colony (General and Local) for the year 1889 amounts to £504,945, equal to £3 7*s.* 10*d.* per head, or 59·16 per cent. of the whole Revenue for the same year. Of this sum £422,643, or £2 16*s.* 10*d.* per head, was raised by the General Government, and £82,301, or 11*s.* per head, was raised by Local Government. A fuller statement of Taxation is given in the following tables:—

RETURN showing the Amount of Taxation under General and Local Government.

TAXATION, YEAR **1889.**

DESCRIPTION.	TAXATION. Amount.		Per Head of Mean Population, 1889.
I.—GENERAL GOVERNMENT.	£ s. d.	£ s. d.	s.
Customs Duties (excluding Bond Rents and Drawbacks)	...	307,351 10 4	41·31
Excise—Duty on Beer	...	15,672 4 0	2·10
Real and Personal Estates Duties—			
Land Tax	...	41,807 16 5	5·61
Dividend Tax	...	10,152 9 1	1·36
Rural Police Rate (not Municipal)	...	8281 2 0	1·13
Licences—			
Dog Licences	1261 15 0	...	0·17
Publicans' ditto	10,011 10 0	...	1·35
Licences, various	2773 0 4	...	0·37
		14,046 5 4	
Stamp Duty	18,707 8 11	...	2·51
Probate Duty	6624 13 8	...	0·89
		25,332 2 7	
*Total Taxation, General Government**	...	422,643 9 9	56·80
II.—LOCAL GOVERNMENT.			
MUNICIPALITIES—			
General Rates	47,469 15 4	...	6·39
Dog Tax	2631 10 0	...	0·35
Licences, &c.	807 17 0	...	0·10
Other Taxes	68 10 0	...	0·01
		50,977 12 4	
			6·85
MARINE BOARDS—			
Wharfage	12,456 4 1	...	1·67
Exemptions from Pilotage	146 8 0	...	0·02
Harbour Dues	2287 12 9	...	0·31
Boat and Watermen's Licences, &c.	50 4 0	...	0·01
		14,940 8 10	
			2·01
ROAD TRUSTS—			
Rates	...	15,998 2 4	2·15
TOWN BOARDS—			
Rates	...	385 2 3	0·05
*Total Taxation, Local Government**...	...	82,301 5 9	11·06
*Total Taxation, General and Local**...	...	504,944 15 6	67·86

* Excluding all rates or charges such as gas, water, and light rates—which, though levied in the form of a tax, directly confer upon the person charged an express benefit or service estimated to be equal in monetary value to the rate levied.

Taxation*—Decennial Return.

AMOUNT.

	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
	£	£	£	£	£	£	£	£	£	£
General Government	300,241	344,723	370,856	388,407	344,192	366,118	371,544	375,501	405,807	422,644
Local Government	61,800	62,942	66,433	70,911	69,843	75,661	73,628	81,958	78,171	82,301
Total	362,041	407,665	437,289	459,318	414,035	441,779	445,172	457,459	483,978	504,945

PER HEAD.

	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
General Government	2 12 10	2 18 9	3 1 5	3 2 5	2 12 9	2 14 9	2 14 10	2 13 9	2 16 3	2 16 10
Local Government	0 10 11	0 10 9	0 11 0	0 11 5	0 10 8	0 11 3	0 10 11	0 11 9	0 10 10	0 11 0
Total	3 3 9	3 9 6	3 12 5	3 13 10	3 3 5	3 6 0	3 5 9	3 5 6	3 7 1	3 7 10

* Excluding all rates or charges such as gas, water, and light rates—which, though levied in the form of a tax, directly confer upon the person charged an express benefit or service estimated to be equal in monetary value to the rate levied.

Glancing over the last ten years, the most significant points to be noticed are the following :—First, the Public Debt has increased from £1,943,700 to £5,019,050, which, reckoned relative to population, is equal to an increase of £16 3*s.* 11*d.* per head. Taxation of General Government has increased from £300,241 to £422,643, equivalent to an increase of 3*s.* 11*d.* per head. On the other hand, Public Works of great utility have been extensively carried out in the interim, and the taking over of the functions connected with the management of the Main Roads by General Government must have lightened local burdens to a considerable extent.

In 1870 there were no Railways in any part of the Island. There are now working 374½ miles, whose construction and equipment is valued at £2,925,362, and there are lines under construction equal to 98 miles, whose value may be estimated at about £287,719, making a total of £3,213,081 invested in Railways alone, which, as an asset in itself, covers the greater part of all loans authorised on 31st December, 1889.

The value of the total external trade within the latter period has advanced from £1,441,625 to £3,070,892; assessed property has advanced from £610,265 to £923,657; and population has advanced from 100,765 to 151,480.

All these matters show the decided progress made by the Colony during the period 1870 to 1889.

TAXATION in principal British Possessions.

Country.	Year.	Taxation.			Proportion of Taxation raised by Customs.
		Amount. 000's omitted.	Per Head.	Per cent. of Total Revenue.	
		£	£ s. d.		
United Kingdom	1889	73,597	1 18 11	83·19	27·27
India	1887	27,946	0 2 10	37·70	10·9
Natal	1882	278	0 13 6	42·28	83·2
Canada.....	1889	6378	1 5 2	78·93	77·5
Cape of Good Hope	1881	1680	1 12 0	56·00	55·4
Australasia	1889	11,362	3 10 10	39·78	75·80
South Australia.....	„	711	2 4 6	31·33	74·42
New South Wales...	„	2687	2 8 6	29·54	71·19
Tasmania	„	423	2 16 10	62·25	72·72
Victoria	„	3749	3 7 10	43·22	95·15
New Zealand	„	2090	3 8 1	52·36	70·49
Queensland.....	„	1516	3 16 4	44·07	88·67
Western Australia...	„	194	4 10 3	43·88	88·54

TAXATION in principal Foreign Countries.

Country.	Year.	Taxation.			Proportion of Taxation raised by Customs.
		Amount. 000's omitted.	Per Head.	Per cent. of Total Revenue.	
		£	£ s. d.		
Japan	1887	13,353	0 7 0	81·3	
Russia	„	51,944	0 10 0	65·5	14·9
German Empire	„	26,054	0 11 1	56·5	
Mexico	„	3904	0 11 5	81·1	
Belgium.....	„	6570	1 2 3	52·6	18·8
Greece.....	„	2207	1 2 3	92·4	
United States.....	1889	74,285	1 5 0	92·1	
Portugal.....	1887	6451	1 7 5	84·1	
Austria Hungary....	„	52,715	1 5 8	72·2	9·8
Spain	„	30,012	1 13 1	88·2	
Italy	„	50,592	1 13 9	81·2	
Netherlands	„	8156	1 17 2	84·3	
France.....	„	91,821	2 8 0	72·4	15·1

PUBLIC Revenue, Expenditure, and Debts of British Possessions for Year 1888.

	Revenue.		Expenditure.	Debt.
	Customs Revenue.	Gross Revenue.		
	£	£	£	£
United Kingdom	19,630,000	89,802,254	87,423,645	705,575,073
India	3,215,246	78,759,744	80,788,576	191,945,844
Straits Settlements	..	578,725	533,965	24,000
Ceylon	254,582	1,091,457	1,036,299	2,251,906
Mauritius	253,402	857,406	777,158	751,700
Labuan	..	3823	3923	..
Hong Kong	..	324,438	415,068	200,000
	3,723,230	81,615,593	83,554,989	195,173,450
Australasia:—				
New South Wales	1,883,058	8,886,360	9,072,835	44,100,149
Victoria	2,353,050	7,607,598	7,287,151	34,627,382
South Australia	533,665	2,494,556	2,376,399	19,147,700
Western Australia	159,059	357,003	385,130	1,275,200
Tasmania	297,912	640,068	709,486	4,499,470
New Zealand	1,390,717	4,109,815	3,962,912	36,971,691
Queensland	1,344,504	3,463,097	3,368,405	25,840,950
	7,961,965	27,558,497	27,162,318	166,462,542
Fiji	24,696	65,019	58,993	253,290
Falkland Isles	2316	8951	8818	..
Natal	290,084	990,614	1,045,461	4,535,126
Cape of Good Hope	1,045,046	3,426,362	3,260,759	22,295,124
St. Helena	5841	9265	10,448	3250
Lagos	48,240	57,058	60,840	..
Gold Coast	79,690	97,807	133,468	..
Sierra Leone	43,880	63,035	63,288	58,000
Gambia	17,228	20,986	21,359	..
	1,557,021	4,739,097	4,663,434	27,144,790
Canada	4,542,314	7,378,451	8,319,148	48,191,375
Newfoundland	260,819	285,423	381,363	694,915
	4,803,133	7,663,874	8,700,511	48,886,290
Bermuda	24,806	29,372	28,947	8614
Honduras	20,971	43,511	41,587	16,650
West India Islands:—				
Bahamas	38,372	45,578	44,430	83,126
Turk's Islands	4934	6453	7180	..
Jamaica	310,386	691,248	617,552	1,581,097
Windward Islands	156,718	294,444	278,781	204,615
Leeward Islands	70,481	105,447	115,703	54,771
Trinidad	205,675	480,523	463,346	552,680
	786,566	1,623,693	1,526,992	2,476,289
British Guiana	247,860	461,941	490,566	698,251
Gibraltar	11,279	59,262	53,061	..
Malta	156,600	240,146	212,313	79,168
	415,739	761,349	755,940	777,419
TOTAL	38,923,431	213,837,240	213,858,360	1,146,521,117

PUBLIC Revenue, Expenditure, and Debt of Principal Foreign Countries.

(000's omitted.)

	Revenue.		Expenditure.	Debt.
	From Customs.	Gross.		
	£	£	£	£
Russia in Europe 1889	19,160	89,516	89,516	719,232
Norway 1887-8	1142	2472	2512	5849
Denmark 1888-9	1447	3108	3342	5692
* German Empire...1889-90	13,540	48,403	47,268	42,584*
Belgium 1888	...	13,865	14,225	77,725
France..... 1889	13,854	120,487	148,467	1,180,560*
Italy 1888-9	9463	79,105	78,587	450,000
Austria (Proper)..... 1888	3483	43,108	44,877	305,589†
Hungary 1889	...	28,938	29,734	...
United States 1889	46,631	131,700	128,794	210,060

*Year 1888. † Year 1887.

CHAPTER XIII.

Production.

Agriculture.

As usual, the estimates of the season's yield were prepared from the best local information of those immediately interested in nearly all cases *after the cereals were garnered.*

The total land in cultivation during 1889-90 was 488,354 acres, as against 481,533 acres in 1888-9, and 373,299 acres in 1880-1, *i.e.*, the acreage of cultivated lands, inclusive of area in permanent artificial grasses, has increased 6821 acres, or 1·42 per cent., as compared with 1888-9, and 115,055 acres, or 30·82 per cent., as compared with 1880-81.

The acreage in crop during 1889-90 is stated to be 189,859 acres, that is, a larger area than during former season by 17,770 acres, and more than during season 1880-81 by 49,171 acres.

The following table gives a more detailed statement of the general results, and of the extent of agriculture and horticulture in Tasmania during the last season, together with comparisons with the preceding year and with the corresponding year of the last decade :—

AGRICULTURE, 1880-1, 1888-9, 1889-90.

	1889-90.	1888-9.	1880-1.	1889-90 as compared with 1888-9.		1889-90 as compared with 1880-1.	
				Increase.	Decrease.	Increase.	Decrease.
Wheat—							
Acres	49,055	40,657	50,022	8398	...	...	967
Bushels	756,639	819,497	750,040	...	62,858	6599	...
Bushels per acre	15·43	20·15	14·99	...	4·72	·44	...
Barley—							
Acres	4446	4670	8297	...	224	...	3851
Bushels	105,574	109,979	169,156	...	4405	...	63,582
Bushels per acre	23·75	23·55	20·38	·20	...	3·37	...
Oats—							
Acres	40,169	33,834	19,853	6335	...	20,316	...
Bushels	1,148,935	946,354	439,446	202,581	...	709,489	...
Bushels per acre	28·60	27·97	22·13	·63	...	6·47	...
Hay—							
Acres	50,913	52,521	31,615	...	1608	19,298	...
Tons	73,859	58,290	35,883	15,569	...	37,976	...
Tons per acre	1·45	1·11	1·13	·34	...	32	...
Potatoes—							
Acres	17,015	13,653	10,421	3362	...	6594	...
Tons	72,275	66,721	32,548	5554	...	39,727	...
Tons per acre	4·25	4·88	3·12	...	·63	1·13	...
Hops—							
Acres	536	558	568	...	·22	...	·32
Lbs.	685,031	749,660	644,273	...	64,629	40,758	...
Lbs. per acre	1278·04	1348·48	1134·28	...	70·44	143·76	...
Apples, bushels	503,013	367,426	155,237	135,587	...	347,776	...
Pears, bushels	29,828	21,872	22,086	7956	...	7742	...
Land in crop, acres	189,959	172,189	140,788	17,770	...	49,171	...
Land in permanent Artificially sown Grasses, acres	190,717	178,801	132,969	11,916	...	57,748	...
Total Land in Cultivation, acres	488,354	481,533	373,299	6821	...	115,055	...

LIVE STOCK.

STATISTICS regarding the number of animals under one year old on 31st March, are as follow:—

	No.		PER-CENTAGE UNDER ONE YEAR OLD.				
	1890.	1889.	1886.	1887.	1888.	1889.	1890.
Horses	29,778	29,238	10·8	9·65	10·37	8·69	7·89
Cattle	150,004	142,019	18·6	18·07	18·75	16·83	18·59
Sheep	1,551,429	1,430,065	20·2	17·80	26·14	17·57	22·01

Acreage in Crop and in Cultivation.

It will be observed that the acreage in crop upon the whole is greater than in the previous season by 17,770 acres—land in Wheat having increased by 8398 acres, Oats by 6335 acres, and Potatoes by 3362 acres. The following, however, shows a diminution of the area in crop, viz.—Barley, 224 acres; Hay, 1608 acres; Hops, 22 acres. It is evident from this analysis that no material change has taken place in the tendency of Agriculture to advance in harmony with the Colony's growth of population. This is better appreciated by tabulating the results over a long period, as follows:—

Acreage in Crop.

	Population.	Acres in Crop.	Acres in Crop per Head.
Year 1860	87,775	152,860	1·74
1870	100,765	157,410	1·56
1880	114,762	140,788	1·23
1890	151,480	189,959	1·25

This analysis clearly shows that relative to population the land devoted to crops has steadily declined from 1·74 acres per head in 1860 to 1·25 acres per head in 1890.

These figures, however, only cover a portion of the farmer's industry in Tasmania; for, unlike the neighbouring industries in the naturally open tracts of Australia, the Tasmanian farmer on the average combines to a much greater extent the allied branches of stockbreeding and the dairy. It is necessary, therefore, to glance at figures which may indicate whether the farmer's energies may not have been more vigorously drawn to the two other branches named. This is best indicated by noting the extent of bush land cleared and rendered fit for grazing either upon naturally sown or artificially sown grasses, or by the extent to which tilled lands are being devoted to the growth of Hay; thus:—

	Lands other than portion in Crop rendered fit for grazing.		Hay.	
	Acres.	Acres per head of Population.	Acres.	Acres per head of Population.
	No.		No.	
1860	65,455	·75	31,837	·36
1870	172,847	1·72	33,612	·33
1880	232,511	2·03	33,615	·28
1890	298,395	1·96	50,913	·34

Live Stock.

From these figures, it is clear that the land devoted to grazing purposes has upon the whole relatively advanced more rapidly than the growth of population. We are thus prepared to understand why land under tillage has relatively declined in proportion as the lands devoted

to grazing purposes have increased. This is also borne out by reference to the Live Stock in each year since 1860.

Number.

	Horses.	Cattle.	Pigs.	Sheep.
	No.	No.	No.	No.
1860	21,034	83,366	31,290	1,700,930
1870	22,679	101,459	49,432	1,349,775
1880	25,267	127,187	48,029	1,783,611
1890	29,778	150,004	58,632	1,551,429
	Per Head of Population.			
1860	·24	·95	·35	19·38
1870	·23	1·01	·49	13·40
1880	·22	1·11	·42	15·54
1890	·18	·99	·35	10·23

By these analyses we perceive that, as regards *Cattle*, the development has more than kept pace with the growth of population. As regards *Pigs*, the development is about equal; but as regards *Horses* and *Sheep*, it is evident that the development greatly falls behind decade by decade in comparison with the growth of population within the Thirty years over which the comparison extends. No figures are available to contrast the advance in *Dairy Farming*, but there is good reason for the belief that in this direction a positive advance has been made,—the produce of the 30,263 milch cows alone being valued at £302,630 for the year ending 31st March, 1890, *i.e.*, an estimated advance of £22,160 upon the previous year.

General Crops.

By pursuing a similar mode of investigation with respect to the principal crops during the last thirty years, we are better enabled to determine the actual progress made, thus :—

Yield.

	1860.	1870.	1880.	1890.
1. Yield of Wheat, bushels	1,415,896	896,881	750,040	756,639
2. ,, Oats, bushels	926,418	691,250	439,446	1,148,935
3. ,, Barley, bushels	126,605	161,729	169,156	105,574
4. ,, Potatoes, tons	33,589	36,028	32,548	73,859
5. ,, Turnips, tons	5829	8342	10,294	20,326
6. ,, Hops, lbs.	...	785,977	644,273	685,031
7. ,, Apples, bushels	118,810	147,614	155,237	503,013
8. ,, Pears, bushels	22,049	27,553	22,086	29,828

Thus, broadly, we perceive a very great advance in all crops enumerated, with the important exceptions of Wheat and Barley. It is evident that the attention formerly given to wheat-growing is now more profitably directed to root crops, both Potatoes and Turnips showing a very great expansion since 1860. Fruit-growing has also made wonder-

ful progress within this period; and now that the English market is open to us, it is likely that this industry will still more rapidly improve. The backward condition of Wheat-growing in this Colony, however, is a matter to be deplored, as during the last five years the local supply has failed to meet the demands of the local market. The importations of Wheat and Flour during the year ending the 31st March, 1890, alone represent 124,006 wheat bushels. This demands special attention.

Cultivation of Wheat.

The continued stationary condition or decline in the cultivation of this important cereal is a very grave matter. Ever since the year 1882-3 the local supply has failed to meet the local requirements, and has to be supplemented by foreign importations of Wheat and Flour. During the last 10 years we have had to import in this way Wheat and Flour equivalent to 1,425,290 wheat bushels, which, even at 4*s.* per bushel, represents a sum of £285,158. But the greater portion of these imports were obtained within the last five years, viz., 1,374,997 wheat bushels, which, at 4*s.* per bushel, represents a sum of £274,999, or £54,999 *per year*. It is difficult to find a satisfactory reason for this backward condition of our Wheat industry, for if we investigate the results in the neighbouring colonies it is manifest that as regards steadiness of climatic conditions, fertility of soil, yield per acre, rates of wages, and local market prices, Tasmania is by far more favourably conditioned than any other Colony, save New Zealand.

Wheat Yield in Australasia, and Local Consumption.

Average of Five years ending Year 1888.

	Yield per Acre.	In bushels, yield per Head.	Consumption per Head.	Local Consumption.	
				Deficiency.	Surplus.
New Zealand	24·46	12·20	7·4	—	4·8
Tasmania	18·20	4·75	6·7	1·9	—
New South Wales	11·95	3·91	6·5	2·5	—
Western Australia	11·23	8·74	6·5	—	2·2
Queensland	9·68	0·28	6·1	5·8	—
Victoria	9·58	10·78	6·4	—	4·4
South Australia	7·24	43·85	6·5	—	—
Australasia	9·89	10·84	6·5	—	4·3

It seems to be a most remarkable thing that while the soil of Tasmania produces on the average nearly twice the yield (18·20) of the average of Australasia, that she should under-produce by about 30 per cent.: while the whole of Australasia, only yielding 9·89 bushels per acre, should produce 4·3 bushels per head, or 66 per cent. *above* the requirements for Australasia.

The most unsatisfactory view of the matter, however, is shown in the following table, covering a period of ten years. It will be observed that during the first quinquenniad the deficiency was only 0·40 bushels

per head, or nearly 6 per cent.; while in the last quinquenniad the deficiency rose to 1·93 bushels *per head*, or 28·8 per cent.; thus:—

SUPPLY of Wheat and Flour for Decade ending Year 1889-90.

(Reduced to Wheat Bushels per Head of Population.)

	Produced locally.	Imports.	Total Supply.	Estimated	
				Excess.	Deficiency.
Year 1880-1	5·19	1·14	6·33	...	0·35
1881-2	8·21	0·01	8·20	1·52	...
1882-3	7·38	0·25	7·63	0·95	...
1883-4	5·80	0·03	5·83	...	0·85
1884-5	5·01	0·60	5·61	...	1·07
Mean of 5 years.....	6·32	0·40	6·72	0·04	...
Year 1885-6	3·86	2·11	5·97	...	0·71
1886-7	4·61	2·07	6·68	...	...
1887-8	4·74	2·45	7·19	0·51	...
1888-9	5·61	1·89	7·50	0·82	...
1889-90.....	4·94	1·16	6·10	...	0·58
Mean of 5 years.....	4·75	1·93	6·69	...	...
Mean of 10 years	5·53	1·17	6·70		

No doubt our farmers might throw some light upon this important matter, if called upon to do so; and seeing that the probabilities are that the deficiency will continue to increase year by year, it may perhaps be advisable that those competent to deal with the subject should at once enter upon the investigation of the cause or causes which so seriously oppose the development of this, one of the most important industries of a young country. It is estimated that the deficiency for the current year represents 266,000 bushels, or £53,200. Of course, this year's deficiency is in a large measure owing to the exceptionally low yield (15·44 bushels per acre) caused by the extraordinary attack of rust; but even if the average yield of 18·20 bushels had been maintained, there would still have been a deficiency of 132,708 bushels, equal, at least, to a sum of £26,548.

Seeing that there are so many conflicting elements to be taken into consideration in forming an estimate of the progress of the Farming and Pastoral industries over the period of thirty years, we can only grasp the general results by tabulating approximately the values of all products, say at a common rate for each product. If in this way we tabulate the results of the years 1860, 1889, and 1890 at the market rates current in Hobart in the year 1889, we have a fixed measure for fairly estimating the value of the products for the respective years, and we are thereby better enabled to judge of the ultimate tendency and progress being made from a commercial point of view. It is not to be expected that such an estimate can be depended upon for giving absolutely accurate

results, but for relative purposes it may be confidently trusted; and even as regards absolute accuracy, the figures will not be far from the truth as regards the value of products when placed in the market.

SUMMARY showing approximately the Relative Value of Agricultural and Pastoral Produce for the years 1859–1860, 1888–9, and 1889–90.

	1859-60.	1888-9.	1889-90.
Agricultural Produce—	£	£	£
Wheat	353,974	204,874	189,160
Barley	28,487	24,745	23,754
Oats	127,382	130,124	157,978
Other Cereals	21,485	27,216	39,238
Potatoes	125,958	249,703	271,031
Other Root Crops	62,889	137,781	104,376
Hay	276,520	233,160	289,100
Hops	...	37,483	34,252
Apples	29,702	91,856	125,753
Pears	6061	6014	8203
Other Fruits	10,083*	21,762	12,040
Other Garden and Orchard Produce		8487	
Total Agricultural Produce	1,042,541	1,173,205	1,254,885
Pastoral Produce—			
Milk, Butter, and Cheese	168,440	280,470	302,630
Value of Surplus Stock produced—			
Cattle	86,157	157,763	168,750
Sheep	80,250	134,069	145,446
Pigs	78,225	108,057	146,680
Horses	16,824	23,392	23,804
Wool exported and consumed locally	370,427	318,735	295,042
Live Stock exported	11,061	56,045	60,472
Total Pastoral Produce	811,654	1,078,531	1,142,824
Grand Total	1,854,195	2,251,736	2,397,709
Grand Total per head of Population	21·13	15·41	15·83
Agricultural Produce ditto	11·88	8·03	8·29
Pastoral Produce ditto	9·25	7·38	7·54

As population increases in a young country, the non-agricultural element assumes larger proportions relatively to the whole. It cannot be expected, therefore, that the rate *per head* of Agricultural and Pastoral products in the later years will be equal to that of the earlier and more purely Agricultural period.

Thus, the value per head of the combined products in 1890 is £15·83, being less than in 1860 by £5·30 per head. Nevertheless, it is evident that Pastoral products have not fallen relatively so much as Agricultural products, the former only falling by the amount of £1·71, while the latter have fallen £3·59. This, again, bears out the general conclusion that the backward state of some forms of Agriculture have been counterbalanced to a great extent by greater enterprise in Pastoral matters.

Decline in Wheat-growing.

The decline in wheat-growing is not due to the absence of local skill, nor to the want of facilities as regards local means of transit by road or rail, but primarily to the narrowed or doubtful profits consequent upon the vastly increasing area now devoted to the culture of wheat in other parts of the world (America especially), resulting in the keenest competition in the word's great centre of wheat consumption—England. This competition is so keen, and has been so growing in intensity, that the English farmer has been compelled, year by year, to curtail his acreage in wheat in favour of foreign producers, even although the former has the advantage of a much greater yield and the closest proximity to the world's market.

The following table, partly extracted and partly calculated from Statistical Abstracts, 1880 to 1889, prepared by Mr. Giffen, of the Board of Trade Department, England, shows most significantly the progress, direction, and extent of this competition :—

QUANTITIES of Wheat and Wheat Meal and Flour Imported into the United Kingdom during the last Five Years.

Countries.	Wheat-total of Grain and Flour in equivalent weight of Grain (1 cwt. of Wheat Flour equal to 1¼ cwts. of Wheat in Grain).						
	1880.	1885.	1886.	1887.	1888.	1889.	
	cwts.	cwts.	cwts.	cwts.	cwts.	cwts.	Per cent. to total.
Russia—Northern Ports	244,463	4,615,364	1,708,664	721,144	714,280	900,177	1·17
Southern Ports	2,719,296	7,467,028	2,040,261	4,833,967	21,026,746	20,705,258	26·93
Sweden	5086	54,636	16,666	450	437	1375	·00
Denmark	418,911	154,140	112,825	85,955	240,429	155,220	·20
Germany	2,821,164	3,749,200	2,331,317	2,287,073	4,661,240	3,980,314	5·18
France	350,360	236,533	145,802	191,150	143,726	239,706	·31
Spain	252	—	—	—	50	—	—
Austrian Territories	1,416,391	2,358,423	1,759,249	1,765,244	2,559,649	2,765,225	3·60
Roumania	126,629	398,709	290,248	589,236	1,417,703	2,837,629	3·69
Turkey	4419	653,180	249,597	1998	160,975	672,570	·87
Bulgaria	—	669,605	177,734	65,364	293,169	634,453	·83
Egypt	1,605,437	110,233	40,882	197,899	737,060	327,320	·43
British North America	4,543,407	2,095,376	4,043,964	5,165,741	2,070,943	2,631,110	3·42
United States—							
Atlantic Ports	37,690,287	22,881,400	25,994,012	37,721,516	20,520,633	15,940,746	20·73
Pacific Ports	7,092,813	16,056,331	12,936,133	11,384,266	9,821,239	13,622,940	17·72
Chile	1,450,358	1,622,868	1,706,472	2,210,647	1,485,861	572,953	·74
British India	3,230,144	12,175,260	11,027,143	8,512,449	8,166,254	9,218,217	11·99
Australasia	4,613,353	5,443,588	829,564	1,355,930	2,379,466	1,447,639	1·88
Other Countries	127,054	548,044	387,223	1,291,531	1,999,555	239,137	·31
Total	68,459,814	81,289,918	65,797,756	78,381,560	78,399,415	76,891,989	100·00

The significant consideration is that in 1870 the United States of America only exported to England 14 million cwts. of wheat and flour, or about 40 per cent. of all imports to England, while in 1888 they exported 30·3 million cwts., being 38·82 per cent. of all imports of wheaten food in England. This, of course, could only be effected by a continual cheapening of wheat to the consumer, and a narrowing profit to producers, the weaker going to the wall. That the gradual cheapening of wheat in the English market has affected, and must continue to affect, English as well as Australasian producers, may be gathered from Mr. Giffen's tables of the English wheat acreage, and the average price of wheat in England during the period 1870 to 1889.

Year.	United States' Supply of Wheat.	Population United Kingdom.	Acreage in Wheat, Great Britain.	English average Price of Wheat per Imperial Quarter.
	Million cwts.	No.	No. acres.	*s.* *d.*
1870.....	14	31,205,444	3,500,543	46 10
1871.....	15·5	31,555,694	3,571,894	56 8
1872.....	9·6	31,874,183	3,598,957	57 0
1873.....	21·7	32,177,550	3,490,380	58 5
1874.....	27·1	32,501,517	3,630,300	55 8
1875.....	26·3	32,838,758	3,342,481	45 2
1876.....	22·2	33,199,994	2,995,957	46 2
1877.....	23·5	33,575,941	3,168,540	56 9
1878.....	33·5	33,943,773	3,218,417	46 5
1879.....	44·6	34,302,557	2,890,244	43 10
1880.....	44·7	34,622,930	2,909,438	44 4
1881.....	45·6	34,952,204	2,805,809	45 4
1882.....	44·8	35,297,114	3,003,960	45 1
1883.....	40·2	35,611,770	2,613,162	41 7
1884.....	35·5	35,961,663	2,677,038	35 8
1885.....	38·9	36,331,119	2,478,318	32 10
1886.....	38·9	36,709,409	2,285,905	31 0
1887.....	49·1	37,091,564	2,317,324	32 6
1888.....	30·3	37,440,505	2,564,237	31 10
1889.....	—	37,823,215	2,449,354	29 9

Thus, the most striking illustration is appreciated by noting that the United States' supply of wheat increased from 14 millions of cwts. in 1870 to 30·3 millions of cwts. in 1888, while the English acreage under wheat declined from 3,500,543 acres in 1870 to 2,449,354 in 1889, notwithstanding an increase during this period of 6,617,771 persons to her population. These reasons are also only too apparent as regards the gradual fall in price from 58*s.* 5*d.* per quarter in 1873 to 29*s.* 9*d.* in 1889, *i.e.*, a reduction equal to nearly 49·07 per cent. in sixteen years.

When we consider all these things, it is not a matter for surprise that Australasia should begin to realise the straitening effects of such competition, and that her production of wheat should have declined very considerably since 1883. New Zealand, however, has discerned her danger, and has bravely faced the difficulty by turning her attention more vigorously to the production and exportation of Fresh Meat. This is evidenced by the fact that, although Australia and New Zealand

only exported £498,783 of Fresh and Preserved Meats to the English market in 1882, these exports rose to £1,309,739 in 1885. In 1889 these exports reached a sum of £1,565,025. No doubt in other products a vigorous effort will be made by the producers of Australasia in order to cope with the altered circumstances of competition, and the Tasmanian producer may not stand idly by. Local producers will watch with interest the results of this struggle, and will probably set themselves to imitate neighbouring Colonies in what they appear to be successful.

Further particulars regarding the exportation of Breadstuffs and Fresh and Preserved Meat are given in the following summaries :—

VALUE of Grain and Wheaten Flour exported to the United Kingdom, 1885–9.

From	1885.	1886.	1887.	1888.	1889.
	£	£	£	£	£
South Australia	1,611,371	69,669	209,138	558,188	214,759
Victoria	402,712	112,894	233,238	212,778	138,979
New South Wales	14,190	750	6416	12,423	—
Tasmania	—	—	—	—	—
New Zealand	202,188	142,332	85,985	256,264	279,306
	2,230,461	325,645	534,777	849,653	633,044

VALUE of Mutton (fresh), Meat unenumerated, preserved, otherwise than by salting, exported to the United Kingdom, 1885–9.

From	1885.	1886.	1887.	1888.	1889.
	£	£	£	£	£
South Australia	220	—	—	2912	550
Victoria	149,321	78,853	57,070	7407	16,107
New South Wales	351,407	98,746	311,488	275,609	126,828
Queensland	40,679	8	25,465	454	4568
New Zealand	768,112	801,200	911,603	1,084,827	1,416,972
	1,309,739	978,807	1,305,626	1,371,209	1,565,025

Notwithstanding what has been said, it certainly seems to be far from creditable to agricultural enterprise in Tasmania that Victoria, with less fertile soil, showing a very much lower average yield per acre, should, during the last season, have produced 11,495,720 bushels of wheat, equal to 10·41 bushels per head, while Tasmania, with its much higher yield per acre, only produced 756,639 bushels, or 5·08 bushels per head. This is inexplicable, when it is considered that Victoria, during 1884, exported a surplus of breadstuffs, principally to England, equal to about 126 per cent. above that which is found to be necessary for her own local requirements for food and seed, while Tasmania, on the other hand,

shows that her total produce of breadstuffs for the same period is nearly 30 per cent. below the average local consumption for food and seed.

To convert lands devoted to agriculture to pastoral purposes may be forced upon our farmers by the greatly reduced prices for wheat, &c., so far as a surplus for export is concerned; but surely the home market should be supplied by local agriculturists!

It is certainly a great injury to the Colony to diminish in any way its agricultural areas in favour of pastoral pursuits, and thereby deprive the Colony of its agricultural population.

The extent of the principal crops grown in the various Colonies, together with comparison as regards the previous year, are given in the following table :—

YIELD of Wheat, Barley, Oats, and Potatoes in the Australasian Colonies during Seasons 1888 and 1889.

	1889.				1888.	
	No. of bushels.	Per cent. to Total.	Per acre.	Per head.	Per acre.	Per head.
			bushels.	bushels.	bushels.	bushels.
Wheat—						
Victoria	11,495,720	27·06	9·75	10·41	7·10	8·14
New South Wales	6,570,335	15·47	15·65	5·95	4·76	1·36
Queensland	134,335	0·30	15·88	0·34	0·89	0·02
South Australia	14,577,358	34·32	7·91	46·22	3·85	19·68
Western Australia	497,238	1·17	14·00	11·55	10·50	7·67
Tasmania	756,639	1·79	15·43	5·08	20·15	5·68
New Zealand	8,448,506	19·89	25·15	13·76	24·22	14·49
All	42,480,131	100·00	10·98	11·38	7·34	7·26
Oats—						
Victoria	5,644,867	26·63	23·87	5·11	14·20	2·64
New South Wales	543,330	2·56	24·30	0·49	13·77	0·10
Queensland	14,561	0·07	19·41	0·04	5·65	0·01
South Australia	131,449	0·62	12·77	0·42	12·20	0·28
Western Australia	41,500	0·20	20·00	0·96	23·42	0·99
Tasmania	1,148,935	5·42	23·75	7·72	27·97	6·56
New Zealand	13,673,584	64·50	32·09	22·28	29·89	18·13
All	21,198,226	100·00	28·72	5·68	24·29	4·15

Barley—						
Victoria	1,831,132	48·71	20·18	1·66	13·55	1·07
New South Wales	113,109	3·01	20·79	0·10	11·08	0·03
Queensland	26,630	0·71	21·24	0·07	22·94	0·02
South Australia	246,841	6·57	12·54	0·78	13·46	0·67
Western Australia	93,075	2·47	17·00	2·16	14·70	1·75
Tasmania	105,574	2·81	28·60	0·71	23·55	0·76
New Zealand	1,342,823	35·72	31·67	2·19	31·15	2·32
All	3,759,184	100·00	22·19	1·01	18·87	0·82
Potatoes—	tons.	tons.	tons.	tons.	tons.	tons.
Victoria	157,104	32·04	3·33	0·14	3·04	0·12
New South Wales	50,096	10·22	2·85	0·05	2·39	0·03
Queensland	25,889	5·28	3·60	0·07	2·83	0·05
South Australia	23,853	4·86	3·74	0·07	4·10*	0·07 *
Western Australia	1386	0·28	3·00	0·03	4·10	0·05
Tasmania	72,275	14·74	4·25	0·49	4·88	0·46
New Zealand	159,729	32·58	5·22	0·26	5·08	0·22
All	490,332	100·00	3·88	0·13	3·70	0·11

* Figures for 1884-5. No collection made during subsequent season.

The prices ruling in ex-Australasian markets, chiefly England, as already discussed, must determine the immediate future of the progress of agriculture throughout Australasia. If the competition of the corn-producing centres of the world (especially America, Russia, and India) still further lower the English prices, the prospects of agriculture in Australasia will be affected most seriously, seeing that distance, rates of wages, and average freight weigh in the balance so disadvantageously.

The yearly variation in the surplus of breadstuffs exported to the United Kingdom from Australasia can scarcely have any influence upon the English market for years to come. During 1889, the whole of the wheat, flour, and other kinds of grain exported from Australasia to the United Kingdom, although equal to 1,447,639 cwts. of wheaten flour, only represented 1·88 per cent. of the British imports of this class. Of the 76,891,989 cwts. imported into the United Kingdom during 1889, the following shows the percentage proportion contributed by the principal countries: viz.—United States, 38·45; Russia, 28·10; India, 11·99; Germany, 5·18; Austrian Territories, 3·60; Australasia, 1·88; British North America, 3·42; France, ·31; Chili, ·74; Roumania, 3·69; Egypt, ·43; Bulgaria, ·83; Denmark, ·20; Turkey, ·87; and all other countries, ·31.

Australasia might still double her export without producing any material influence upon English market prices. The seasonal yield variation in the United States must continue for some time to be the principal regulating influence.

The following series of Tables, in respect of Wheat, show in the order of importance the producing powers of each Colony for 1889, together with the figures relating to the preceding five years:—

YIELD of Wheat per Acre.

Colony.	1884.	1885.	1886.	1887.	1888.	1889.
	bushels.	bushels.	bushels.	bushels.	bushels.	bushels.
New Zealand	25·43	24·40	24·88	26·37	24·22	25·15
Queensland	17·19	5·11	3·12	22·10	0·89	15·88
New South Wales	15·27	10·32	17·37	12·06	4·76	15·65
Tasmania	19·20	17·32	17·91	16·42	20·15	15·43
Western Australia	13·00	11·50	12·00	9·14	10·50	14·00
Victoria	9·52	8·99	11·49	10·81	7·10	9·75
South Australia	7·53	7·53*	7·53*	9·75	3·85	7·91
All	10·21	9·13	10·90	11·87	7·34	10·98

Absolute Yield of Wheat.

South Australia	14,621,755	14,621,755*	14,621,755*	19,012,500	6,187,000	14,577,358
Victoria	10,433,146	9,170,538	12,100,036	13,328,765	8,647,709	11,495,720
New Zealand	6,866,777	4,242,285	6,297,638	9,424,059	8,770,246	8,448,506
New South Wales	4,203,394	2,733,133	5,868,844	4,695,849	1,450,503	6,570,335
Tasmania	654,638	524,353	632,573	675,069	819,497	756,639
Western Australia	382,408	339,376	288,516	269,611	322,759	497,238
Queensland	195,727	51,598	21,221	182,308	8263	134,335
All	37,357,845	31,683,038	39,830,583	47,588,161	26,205,977	42,480,131

Yield of Wheat per Square Mile of Territory.

Colony.	1884.	1885.	1886.	1887.	1888.	1889.
	bushels	bushels	bushels	bushels	bushels	bushels
Victoria	118·71	104·35	137·68	151·65	98·40	130·81
New Zealand	65·77	40·63	60·32	90·59	83·95	80·87
Tasmania	24·97	20·00	24·13	25·75	31·26	28·86
New South Wales	13·53	8·80	18·89	15·11	4·67	21·15
South Australia	16·18	16·18*	16·18*	21·04	6·85	16·13
Western Australia	·36	·32	·27	·25	·30	·47
Queensland	·29	·08	·03	·27	·01	·20
All	—	—	—	—	—	—

Yield of Wheat per Head of Population.

South Australia	47·37	45·76	45·76*	60·67	19·68	46·22
New Zealand	12·42	7·51	10·81	15·80	14·49	13·76
Western Australia	11·83	9·96	7·75	6·47	7·67	11·55
Victoria	11·02	9·41	12·26	13·07	8·14	10·41
New South Wales	4·68	2·94	5·98	4·59	1·36	5·95
Tasmania	5·09	3·97	4·67	4·83	5·68	5·08
Queensland	·65	·16	·06	·51	·02	·34
All	11·81	9·67	11·83	13·64	7·26	11·38

* Figures for 1884-5.

Live Stock.

The number of horses, cattle, sheep, &c. returned on 31st March, 1890, and comparisons with the first and last year of the decade 1880–89, and with the average of decade 1851–60, are given in the following Table :—

	1889.	1888.	1880.	Mean of Decade 1851-60.	1889. Percentage Increase or Decrease as compared with—		
					1888.	1880.	Mean of Decade 1851-60.
Horses	29,778	29,238	25,267	18,820	+ 1·85	+ 17·85	+ 58·23
Cattle	150,004	142,019	127,187	86,625	+ 5·62	+ 17·94	+ 73·16
Sheep	1,551,429	1,430,065	1,796,715	1,851,444	+ 8·49	— 15·81	— 19·34
Pigs	58,632	43,227	48,029	29,053	+ 35·64	+ 22·08	+ 101·81

With respect to Live Stock, it will be observed that, as compared with the former year, there is an increase under each of the following heads, viz. :—Horses (540), Cattle (7985), Sheep (121,364), and Pigs (15,405).

Rabbits, fluke, and the increasing tendency to fatten stock for market are the reasons generally assigned for the decrease in Sheep. No doubt, however, the greater extent of land taken up in respect of Cattle and Pigs must also be considered.

The number of Cows kept for dairy purposes has increased from 28,047 to 30,263, that is, an increase of 2216, or 7·90 per cent., in one year.

In accordance with suggestions made by Messrs. J. W. Norton-Smith, W. H. D. Archer, and J. W. Falkiner, the Statistics relating to Live Stock have been improved by ascertaining approximately the number of Horses, Cattle, and Sheep living over one year old.

According to the returns received the following is an abstract of the percentage of Horses, Sheep, and Cattle for ages under one year :—

Per-centage under one year.

	1889.	1888.	1887.	1886.	1885.
Horses	7·90	8·70	10·38	10·7	10·8
Cattle	18·60	16·83	18·75	19·1	18·6
Sheep	22·01	17·57	20·77	18·4	20·2

In the following table is shown the present stock-carrying capacity of Tasmania as compared with the neighbouring Colonies :—

LIVE Stock per Square Mile, 1889.

	Horses.	Cattle.	Sheep.
Victoria	3·75	15·86	123·82
New South Wales	1·39	5·61	161·28
Queensland	0·53	7·29	21·65
South Australia	0·19	0·36	7·07
Western Australia	0·04	0·11	2·23
New Zealand	1·79	8·57	148·40
Tasmania	1·14	5·72	59·18
TOTAL	0·49	3·00	32·03

Here, again, Tasmania's relative position is far from creditable. As regards horses, cattle, and sheep she takes up the 4th position only.

The order of each colony as regards stock-carrying capacity is as follows :—

Horses.—(1) Victoria; (2) New Zealand; (3) New South Wales; (4) Tasmania; (5) Queensland; (6) South Australia; (7) Western Australia.

Cattle.—(1) Victoria; (2) New Zealand; (3) Queensland; (4) Tasmania; (5) New South Wales; (6) South Australia; (7) Western Australia.

Sheep.—(1) New South Wales; (2) New Zealand; (3) Victoria; (4) Tasmania; (5) Queensland; (6) South Australia; (7) Western Australia.

As regards absolute number, the following are the relative positions for 1889 in respect of Horses, Cattle, and Sheep :—

Horses.—(1) New South Wales; (2) Queensland; (3) Victoria; (4) New Zealand; (5) South Australia; (6) Western Australia; (7) Tasmania.

Cattle.—(1) Queensland; (2) New South Wales; (3) Victoria; (4) New Zealand; (5) South Australia; (6) Western Australia; (7) Tasmania.

Sheep.—(1) New South Wales; (2) New Zealand; (3) Queensland; (4) Victoria; (5) South Australia; (6) Western Australia; (7) Tasmania.

Live Stock—Number in the Colony.—Decennial Return.

YEAR.	*Horses.*	*Horned Cattle,* (including Calves.)	*Sheep,** (including Lambs.)	*Goats.*	*Mules and Asses.*	*Pigs.*
1880–1	25,267	127,187	1,796,715	1748	11	48,029
1881–2	25,607	130,526	1,861,857	1760	13	49,660
1882–3	25,857	122,504	1,845,455	2109	18	47,826
1883–4	26,840	130,525	1,831,069	1860	21	55,774
1884–5	27,188	128,834	1,720,027	1707	17	57,303
1885–6	28,610	138,642	1,648,627	1797	15	67,395
1886–7	29,684	148,665	1,609,046	1832	15	73,118
1887–8	29,528	147,092	1,547,242	1693	13	52,408
1888–9	29,238	142,019	1,430,065	1586	18	43,227
1889–90	29,778	150,004	1,551,429	1564	23	58,632

* Including Sheep on Islands in Bass' Straits.

Live Stock Imported and Slaughtered.

The following is a summary of the Live Stock imported, almost wholly for slaughtering purposes, together with the number of animals actually slaughtered in Hobart and Launceston, during the years 1870 and 1880 to 1889 :—

YEAR.	SHEEP AND LAMBS.		HORNED CATTLE AND CALVES.		PIGS.	
	Imported.	*Slaughtered.**	*Imported.*	*Slaughtered.**	*Imported.*	*Slaughtered.**
1870.....	17,515	89,585	1653	7196	..	3863
1880.....	11,193	89,203	1708	8319	700	4740
1881.....	11,458	87,473	1953	9131	..	5054
1882.....	4795	89,890	927	9610	44	5476
1883.....	10,967	96,015	943	10,067	8	6077
1884.....	27,760	95,098	462	9718	4	7897
1885.....	65,339	102,493	1353	9544	4	7789
1886.....	52,088	106,074	601	9393	5	9408
1887.....	50,790	101,439	1907	8735	4	9359
1888.....	76,097	99,541	2975	9418	1	7917
1889.....	57,157	99,841	2683	9354	1	6026

* At Hobart and Launceston only.

It is very difficult to arrive at a true estimate of the consumption of meat in all Tasmania. The only figures obtainable of any value are those relating to the consumption of meat in Hobart and Launceston. From computations made it is estimated that there are killed each year for home consumption—

75 cattle and calves per 1000 persons.
3340 sheep and lambs per 1000 persons.

It is apparent, therefore, so far as sheep are concerned, that local consumption still slightly exceeds the powers of local producers to meet local needs, for these figures indicate that whenever the natural increase falls below 7·5 per cent. in cattle and 25·5 per cent. in sheep, as compared with their respective permanent stocks living in any year, then meat must be imported, or the permanent stocks will dwindle away. This percentage, too, is only reckoned upon the wants of existing population. If the same percentage of meat be consumed by the population of each succeeding year, then the permanent stock of sheep and cattle must increase correspondingly; otherwise importations must supply deficiencies, or the percentage of natural increase raised to the level of current local wants.

Stud Sheep Exported.

The breeding of stud sheep for export to other Colonies has become a most profitable branch of the pastoral industry. The very high prices which these sheep command in the neighbouring Colonies is highly complimentary to the skill of Tasmanian stock-breeders. The following abstract for the last ten years shows the rapid increase of this branch of industry:—

Year.	Stud Sheep exported.	Value.	Value per Head.
	No.	£	£ s. d.
1880	385	14,984	38 18 2
1881	1306	38,305	29 6 7
1882	1937	34,012	17 11 2
1883	2913	62,275	21 7 6
1884	2966	66,743	22 10 1
1885	3249	58,105	17 17 8
1886	2207	32,689	14 16 3
1887	4005	54,337	13 11 4
1888	4140	56,045	13 10 8
1889	4358	58,932	13 10 6

Wool.

The clip of Wool for the year 1889, as ascertained by Exports during the 12 months ending 30th November, 1890, is estimated to be 8,355,009 lbs., and the declared value is stated to be £386,361, equal to 11·09*d.* per lb. It is doubtful, however, whether the same mode of declaring values is observed by all exporters, and therefore too great reliance should not be placed upon the varying rate as deduced from total weights and values of any single year. The Wool actually exported during the year 1889, irrespective of the clip of any particular season, was 6,240,900 lbs., and the nominal export value is stated to be £283,237. The four following tables give information regarding Wool and Wool exports, the yearly average for each quinquennial from 1851 to 1880 inclusive, and the actual for the years 1881 to 1889.

Sheep-washing and Shearing.

	1889.	1888.	1889 Compared with previous Year.	
			Increase.	Decrease.
Number of Sheep-owners who washed their sheep before shearing	28	60	...	32
Number of Sheep-owners who sheared their Sheep in the grease	2048	1939	109	...

Number of Schedules received, &c.

	1889-90.	1888-9.	1889-90 Compared with previous Year.	
			Increase.	Decrease.
Number of Persons from whom Agricultural and Live Stock Returns were obtained	8223	6202	21	...
Number of Persons from whom Live Stock Returns only were obtained	2247	2516	...	269
Number of Persons from whom Agricultural Returns only were obtained	179	137	42	...
Wheat reaped by Machine ..... (No. of Acres)	45,212	34,729	10,483	...

It is very probable that these figures are less than the actual number, the returns of the Local Collectors, from which they are taken, being somewhat defective in regard to these particulars.

Wool exported, being the Produce of 1889.

	Quantity. lbs.		Value. £
Wool, the produce of 1889, exported in December, 1889	1,554,869	...	76,437
Wool, principally the produce of 1889, exported between 1st January and 30th November, 1890	6,800,240	...	309,924
	8,355,009		386,361

YIELD of Wool, 1851-1889—Average per Year.

Period.	No. of Sheep.	Wool exported, lbs.	Value, £.	Wool exported per Sheep, lbs.	Nominal Value of Wool exported.					
					Per Sheep.			Per lb.		
					£	s.	d.	£	s.	d.
1851–5	2,008,502*	5,508,567	305,091	2·79	0	3	0·46	0	1	1·29
1856–60	1,694,386	5,132,539	389,907	3·02	0	4	7·22	0	1	3·89
1861–65	1,733,158	4,781,396	379,624	2·76	0	4	4·57	0	1	7·06
1866–70	1,583,298	5,068,373	342,502	3·20	0	4	3·91	0	1	4·22
1871–75	1,525,105	5,349,369	366,105	3·44	0	4	9·61	0	1	4·45
1876–80	1,806,336	7,757,561	478,225	4·23	0	5	3·54	0	1	2·80
1881	1,847,479	8,269,724	498,400	4·47	0	5	4·75	0	1	2·46
1882	1,845,455	7,748,500	432,768	4·19	0	4	8·28	0	1	1·40
1883	1,831,069	8,257,765	450,367	4·51	0	4	11·03	0	1	1·08
1884	1,720,027	8,215,101	453,567	4·78	0	5	3·29	0	1	1·25
1885	1,648,627	5,774,142	260,480	3·50	0	3	1·92	0	0	10·83
1886	1,609,046	8,175,780	310,934	5·08	0	3	10·38	0	0	9·13
1887	1,547,242	9,740,200	415,425	6·30	0	5	4·44	0	0	10·24
1888	1,430,065	6,977,000	306,930	4·88	0	4	3·51	0	0	10·56
1889	1,551,429	6,240,900	283,237	4·02	0	3	7·81	0	0	10·89

* It is probable that the number of sheep during these years may have been over-estimated. The quantity of wool, and the price *per sheep*, favour this view.

MINES AND QUARRIES.—*Gold Mining.*

The following is an abstract of the results of Gold Mining during last Decade :—

		1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.
Average number of persons employed		1653	1286	1591	1433	1080	868	837	824	893	1128
Approximate value of mining plant	£	67,200	84,600	110,600	112,100	98,650	93,600	93,600	93,675	100,950	99,975
Gold produced	Quantity	52,595	56,693	49,122	46,578	42,340	41,241	31,015	42,609	39,611	32,333
	Value £	201,297	216,901	187,337	176,442	160,404	155,309	117,250	158,533	147,154	119,703
Gold exported	Quantity	50,999	54,348	41,277	45,052	34,848	37,498	27,757	37,252	33,560	33,234
	Value £	201,655	211,253	160,910	173,561	132,010	141,319	104,402	140,584	127,562	123,486

It would appear that, as compared with the previous year, the number of persons employed has increased by 235; yield has decreased to the extent of 7278 ozs.; and value has decreased £27,451.

The yield *per man* is given in the following table for the years 1888, 1889, and the average for the last decade.

YIELD of Gold per Man.

	1889.	1888.	Average per Year of Decade 1880-89.
Gold produced ..... £	119,703	147,154	164,033
Average of men employed per day, No.	1128	893	1159
Average value of gold produced per man per year ..... £	106·12	164·79	141·53

Tin Mining.

The results of Tin-mining for the years 1888 and 1889 are as follows:—

	1888.			1889.		
	Alluvial Claims.	Lode Mines.	Total.	Alluvial Claims.	Lode Mines.	Total.
Persons employed .... No.	1835	77	1912	2134	83	2227
Mines or Claims ..... No.	173	3	176	78	4	82
Tin Ore produced—						
Tons	5128	117	5245	5090	460	5550
Value ..... £	342,969	8504	351,473	289,718	27,426	317,144
Value per man ..... £	187·93	110·44	183·82	135·76	330·43	142·41

Although the above figures can only be regarded as rough approximates, those relating to actual value are more correct than those shown in tables. The information has been kindly furnished principally by the various Collectors of Agricultural Statistics; but, as stated by many of the latter, they have not the necessary facilities for gaining accurate information, the mining centres being so scattered and too far distant to obtain with exactness the necessary particulars without incurring a considerable expenditure. No provision has hitherto been made for the cost of collecting a complete account of mineral statistics. In the other Colonies the Mines Department has a special staff which undertakes this most necessary work.

Notwithstanding these difficulties, it may be affirmed that the above figures are substantially correct, and are fully borne out by a reference to the metallic tin actually exported during the year.

TIN exported from Tasmania, 1873–89.

	Slag.	Ore.		Metal.	Value.
	Tons.	Tons.	Average Price. £	Tons.	£
Prior to 1878.....	...	4216	...	3659	435,409
1878.....	110	1691	...	4146	316,311
1879.....	172	75	...	4316	303,203
1880.....	...	3	...	3951	341,736
1881.....	...	4	...	4120	375,775
1882.....	...	81	64·0	3589	361,046
1883.....	...	77	56·7	4045	376,446
1884.....	...	32	48·9	3675	301,423
1885.....	...	...	61·8	4242	357,587
1886.....	...	...	52·8	3776	363,364
1887.....	...	1	69·6	3606	407,857
1888.....	...	2	68·0	3775	426,326
1889.....	...	31	57·6	3764	344,941
Total for Period	282	6213	...	50,664	4,711,424

The lower price of tin during the past year has been the principal cause of the decline in export value as compared with the former year. The quantity exported only shows a decrease of 11 tons as compared with the quantity exported in 1888. It is interesting to note that the aggregate value of Tin exported only falls short of the Public Debt of Tasmania on 31st December, 1889, by £307,626.

There is always a considerable difference between Tin Ore produced and Metallic Tin exported during any one year, owing to the fact that large quantities of ore and metal in transit or in stock belonging to one year are exported during the following year.

Of the total Tin produced during 1889 the following is a statement of the relative importance of the various Tin-producing centres of Tasmania:—

	Tons Ore.	Per cent to Total.
North-Western Division.....	2615	47·12
North-Eastern Division.....	2906	52·36
South-Eastern Division.....	...	...
Western and South-Western Division.....	29	·52
	5550	100·00

The following particulars regarding this important industry will also be of considerable interest:—

	1883.	1884.	1885.	1886.	1887.	1888.	1889.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Yearly mean price (English quotation) per ton { max. ..	94 13 4	82 17 1	88 14 7	99 4 2	115 0 0	120 18 11	95 5 5
Yearly mean price (English quotation) per ton { min. ...	91 15 0	80 0 10	85 2 6	96 7 11	108 9 2	115 5 7	92 0 0
Local quotation per unit* ..... { max. ..	0 16 1	0 13 $9\frac{1}{2}$	0 14 11	0 17 $5\frac{1}{4}$	0 19 $10\frac{3}{4}$	0 19 $3\frac{1}{2}$	0 16 3
Local quotation per unit* ..... { min. ...	0 15 7	0 13 4	0 14 $4\frac{3}{4}$	0 16 $10\frac{1}{2}$	0 18 $9\frac{1}{4}$	0 18 6	0 15 $8\frac{3}{4}$
Average per cent. of assay of dressed tin ore . per cent.	72·00	72·00	72·00	72·00	72·00	72·00	72·00
Average yield at smelting works..... per cent.	69·65	70·58	70·28	68·81	67·85	69·08	68·94
Mean assay of Mount Bischoff metallic tin ... per cent.	99·87	99·88	99·89	99·89	99·88	99·88	99·87

* The unit of tin is equivalent to $\frac{1}{100}$ of the ton of metallic tin.

Coal Mines.

Of Coal Mines there were 10 in operation during the year 1889, which, in all, produced 40,300 tons, valued at pit-mouth at £14,280. This is under the yield of 1888 by 1277 tons, and above the average yield of the last decade by 22,816 tons.

Now that railway communication has been extended to the Fingal District, where many important seams of coal occur, we may expect a still more rapid development of the coal-mining industry in Tasmania. It is noteworthy that in the district named the output of coal was raised from 3820 tons in 1886 to 20,509 tons in 1887, and 32,790 tons in 1889.

Mineral Leases, &c.

RETURN of the Number of Leases in force on the 31st December each Year, for the purpose of mining for Metals and Minerals, of the Area of Land leased, and of the Amount of Rental, for the Year 1880 and the Period 1886–1889 inclusive.

	1880.	1886.	1887.	1888.	1889.
Iron—					
No. of Leases	7	...	...	...	1
Area ..... acres	500	...	...	...	80
Rental .....£	115	...	...	...	20
Tin—					
No. of Leases	407	683	712	1091	879
Area ..... acres	18,976	24,879	24,599	33,845	28,557
Rental .....£	4744	6219	6150	8461	7139
Coal—					
No. of Leases	6	41	43	37	34
Area ..... acres	1144	7082	7802	5334	5131
Rental .....£	147	885	975	667	641
Slate—					
No. of Leases	5	3	3	2	4
Area ..... acres	299	122	85	100	200
Rental .....£	37	15	11	13	25
Limestone—					
No. of Leases	...	...	...	...	1
Area ..... acres	...	...	...	...	50
Rental .....£	...	...	...	...	6
Bismuth—					
No. of Leases	1	...	...	...	...
Area ..... acres	80	...	...	...	...
Rental .....£	20	...	...	...	...
Copper—					
No. of Leases	4	...	...	...	...
Area ..... acres	560	...	...	...	...
Rental .....£	140	...	...	...	...
Freestone—					
No. of Leases	...	1	1	...	...
Area ..... acres	...	20	20	...	...
Rental .....£	...	3	3	...	...
Galena—					
No. of Leases	2	1	...	...	...
Area ..... acres	41	80	...	...	...
Rental .....£	11	20	...	...	...
Gold—					
No. of Leases	101	128	307	279	375
Area ..... acres	999	1308	3083	2869	3568
Rental ..... £	999	1308	3083	2869	3568

RETURN of the Number of Leases in force—*continued.*

	1880.	1886.	1887.	1888.	1889.
Silver—					
No. of Leases	...	...	14	123	321
Area ..... acres	...	...	740	6830	18,691
Rental .....£	...	...	185	1707	4673
Shale—					
No. of Leases	...	...	...	...	1
Area ..... acres	...	...	...	...	160
Rental .....£	...	...	...	...	20
Precious Stones—					
No. of Leases	...	...	...	...	1
Area ..... acres	...	...	...	...	80
Rental .....£	...	...	...	...	...
TOTAL—					
No. of Leases	533	857	1079	1532	1617
Area ..... acres	22,599	33,491	36,289	48,978	57,517
Rental .....£	5313	8450	10,406	13,717	16,093

With respect to the nominal decrease in year 1885 in Number of Leases in force and acreage, the Secretary of Mines gives the following explanation :—"Of the mineral and gold leases cancelled during the year 1885, a very large proportion, certainly 80 per cent., had been taken up whilst the scrip-broking mania was in progress, for purely speculative purposes, and in very few cases had any mining been done or attempted to be done upon the ground. Upon the subsidence of the excitement the rents were allowed to fall into arrear, and the leases were consequently forfeited." Much of the same ground has since been retaken up in smaller areas and worked.

MISCELLANEOUS Mining, 1889.

Locality.	Silver.			Copper.		
	No. of Persons employed.	Quantity raised, Tons Ore.	Value.	No. of Persons employed.	Quantity raised, Tons Ore.	Value.
Midland Division—			£			
Westbury (Frankford)	..	..	..	6	50	300
North-Western Division—						
Heazlewood	40	30	750	..	..	..
Western Division—						
Mount Zeehan	31	385	6294	..	..	..
Total	71	415	7044	6	50	300

Stone Quarries.

During the year 1889 there were 32 quarries stated by Collectors to be in operation, employing on an average 96 men.

The following is a statement of the Stone Quarries for lime and building purposes :—

	Quantity.	Value.
Bluestone ..... tons	2600	£13
Limestone ..... tons	2028	£2449
Flagstone and Freestone ..... cubic feet	126,883	£3189

This account, however, is probably much under the mark, as there is a considerable quantity of stone quarried which cannot be ascertained by Collectors in some districts.

GENERAL RETURN.—Mines and Quarries for Year 1879, and Years 1885-6-7-8-9.

	1879.	1885.	1886.	1887.	1888.	1889.
GOLD.						
Number of Men employed	2060	868	837	824	893	1128
Quantity raised ..... ounces	60,155	41,240	31,014	42,609	39,611	32,332
Value of Gold produced..... £	230,895	155,309	117,250	158,533	147,154	119,702
SILVER (Argentiferous Lead.)						
Number of Mines returning information.....	...	...	...	...	...	11
Number of Men employed	...	...	...	...	34	71
Quantity of Ore raised ..... tons	...	...	...	...	417	415
Value of Products ..... £	...	...	...	...	5838	7044
COPPER.						
Number of Mines returning information	...	...	...	...	1	1
Number of Men employed	...	...	...	...	8	6
Quantity of Ore raised ..... tons	...	...	...	...	100	50
Value of Products ..... £	...	...	...	...	...	300
TIN.						
Number of Mines returning information.....	...	206	174	311	176	82
Number of Men employed.....	...	1536	1499	2262	1912	2227
Quantity of Ore raised ..... tons	5790	5461	5728	5702	5245	5550
Value of Products*..... £	347,400	289,433	355,136	399,140	356,660	321,900

COAL.						
Number of Mines returning information	...	...	...	...	...	...
Number of Men employed	...	49	127	85	104	134
Quantity of Coal raised ... tons	9514	6654	10,391	27,663	41,577	40,300
Value of Products † ... £	9514	6654	10,391	27,663	41,577	40,300
STONE.						
Number of Quarries returned	...	17	26	27	26	32
Number of Men employed	...	184	132	144	96	128
Quantity of Stone raised :—						
Bluestone ... cub. ft.	2800	...	...	...	...	2600
Limestone ... tons	1824	1330	3703	2443	1808	2028
Lime ... bushels	12,900	3450	...	...	...	...
" ... tons	...	3000	...	...	...	...
Freestone, Flagstone, Building Stone ... cub. ft.	131,721	228,359	402,868	248,617	230,442	126,883
Rubble or Metal ... cub. ft.	3000	459,000	...	...	...	...
" ... tons	...	...	726	...	...	12,469§
VALUE OF PRODUCTS.						
Bluestone ... £	...	...	...	...	...	13
Lime ... £	...	2163	4593	2363	2150	2449
Building Stone ... £	...	9437	8255	6314	3831	3189
Rubble or Metal ... £	...	...	...	2280	2165	2529
TOTAL VALUE OF OUTPUT OF MINES AND QUARRIES ... £	587,809	462,996	495,625	596,293	559,375	497,426

* General market value. † Local market value. ‡ Dray loads.

Mineral Production of Australasia.

The following table, prepared by Mr. Coghlan, the Government Statistician of New South Wales, represents the principal mineral productions of Australasia from 1852 to 1888 inclusive, if the value of coal extracted prior to the year 1852 be deducted. The average yearly production for the whole period is estimated at £11,070,873.

MINERAL Production of Australasia.

1852 TO 1888.

	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.	Australasia.
	£	£	£	£	£	£	£	£
Gold	37,180,817	222,543,836	21,310,747	891,612	219,492	2,031,520	44,843,642	329,021,666
Silver, Silver Ore	2,948,754	87,618	358,572	2800	320,381	800	124,792	3,843,717
Copper	5,438,262	191,022	1,655,864	19,186,163	514,605	...	17,862	27,003,718
Tin	8,510,372	665,710	5,138,919	1057	...	4,366,483	...	18,682,541
Coal	21,154,307	25,278	903,041	...	...	179,650	2,668,480	24,930,756
Shale	1,156,782	...	...	...	...	...	...	1,156,782
Total	76,389,294	223,513,464	29,367,083	20,081,632	1,054,478	6,578,453	47,654,776	404,639,180
				YEAR **1888.**				
All Minerals	3,856,187	2,563,925	2,066,979	369,014	206,847	613,191	1,531,614	11,147,757

Trades and Manufactories.

The number of Trades and Manufactories enumerated for the year 1889 is 3548. It is less than the number for the previous year by 11. The following is an abstract of the principal groups for the years 1885, 1886, 1887, 1888, and 1889 :—

	1885.	1886.	1887.	1888.	1889.
Trades relating to, and manufacture of, Machines, Tools and Implements ..... No.	273	272	287	292	271
Building Houses ..... „	487	484	487	432	459
Drinks and Stimulants..... „	463	467	461	471	476
General Dealers ..... „	410	434	450	483	461
Supply of Food..... „	574	553	568	599	596
Dress ..... „	326	327	365	420	436
Miscellaneous ..... „	798	819	823	862	849
Total..... „	3331	3356	3441	3559	3548

Jam Manufactories.

The following particulars regarding the Jam Manufactories, which are wholly confined to Hobart and its vicinity, are of considerable interest :—

	1885.	1886.	1887.	1888.	1889.
Establishments working ..... No.	*7	*8	*8	*8	*7
Persons employed..... Males, No.	143	111	97	93	88
Ditto ..... Females, No.	70	77	74	50	35
Capital invested in buildings, equipment, &c..... £	40,800	42,825	35,075	38,850	36,850
Jam manufactured ..... lbs.	2,542,240	2,884,524	2,545,619	2,356,519	1,732,071
Total value ..... £	41,929	46,008	43,302	37,828	24,720
Value per lb..... *d.*	3·96	3·83	4·08	3·85	3·43
Jam exported† ..... lbs.	2,741,737	2,121,850	1,942,623	1,640,811	894,010
Value ..... £	59,653	45,597	35,647	30,669	16,577
Jam sold for local consumption.. lbs.	169,660	279,430	344,310	472,979	603,666
Value ..... £	3037	4657	5694	7605	8440
Raspberries and other fruit used in manufacture of Jam (estimated) lbs.	1,868,723	1,950,539	1,857,052	1,679,100	1,117,492

* Exclusive of Fruit Depôts. † Not including Pulp and Preserved Fruit.

In Jam Manufacture for year 1889 there is a decrease in quantity of 624,448 lbs. as compared with 1888 ; a decrease in absolute value of £13,108 ; and a decrease in the average value per lb. of ·42*d.*

In addition to Jam, some of our manufacturers export fruit to other Colonies simply parboiled without sugar. In this state the fruit is termed "pulp," and is afterwards manufactured into Jam in the Colony to which it is exported. The value of pulp exported in 1889 was £623. The present heavy duties levied upon our Jam exports in some Colonies are stated to be the cause of this mode of export, which seriously threatens the Jam manufacturing industry of this Colony.

Breweries.

Of the 14 Breweries in operation in Tasmania during the year 1889, 5 are situated in Hobart, 4 in Launceston, and 5 in the country districts. The following abstract shows the particulars of importance as regards the years 1885, 1886, 1887, 1888, and 1889 :—

	1885.	1886.	1887.	1888.	1889.
Breweries ..... No.	13	14	14	14	14
Persons employed ..... No.	114	124	134	115	139
Capital invested ..... £	100,686	105,376	103,376	194,051	196,100
Beer brewed ..... galls.	1,278,428	1,296,572	1,293,291	1,398,602	1,377,203
Ditto per head of population ..... galls.	9·55	9·57	9·24	8·99	8·44
Duty ..... £	14,421	15,085	15,492	15,233	15,744

Thus, the production of Tasmanian Beer has decreased ·55 galls. per head of population as compared with the previous year.

Gas Works.

	1885.	1886.	1887.	1888.	1889.
Number of Gas Works	2	2	3	3	3
Ditto Gasometers	6	6	8	8	8
Cubic capacity..... feet	319,000	319,000	482,000	482,000	480,000
Cubic feet consumed during year ..... No.	75,137,300	80,775,600	88,400,000	91,555,500	100,444,000
Length of Mains ..... miles	55	58	62	64	67
Length of Service Pipes to Lamps & Consumers..... ..... miles	21*	67	65	70	73
Estimated cost ..... £	110,500	131,408	156,500	159,550	162,300

* Length of Service Pipes for Hobart not fully stated in these years.

Saw Mills.

	1885.	1886.	1887.	1888.	1889.
Mills.....No.	62	63	57	62	64
Persons employed ... No.	734	759	764	862	917
Capital invested..... £	106,145	126,640	130,045	122,438	131,418
Value of Timber sawn £	114,871	108,342	111,750	146,432	134,171

Waterworks.

The several systems for the storage and supply of water in Tasmania have been constructed at a cost of £219,201, of which the following is an abstract of the particulars :—

	Storage Capacity.	Length of Aqueduct and Reticulation.		Cost.
	galls.	m.	ch.	£
Hobart.....	100,000,000	74	60	135,460
Launceston	1,050,000	65	16	69,184
Campbell Town	6,048,000,000	4	0	12,500
New Norfolk	[a]	4	10	3000
	6,149,050,000	148	6	220,144

[a] Not ascertained.

Brickyards and Potteries.

	1887.	1888.	1889.
Number of existing Establishments	50	51	57
Number of Establishments working[a] ...	42	45	48
Steam-power used in Establishments ...	6	8	8
Engines	6	9	9
Horse-power	93	103	119
Hand-power used in Establishments	15	19	15
Horse-power used in Establishments.....	20	17	24
Water-power used in Establishments ...	1	1	1
Number of hands employed	250	254	244
Number of Bricks made.....	9,477,000	10,069,000	9,118,200
Value of Bricks made	£17,863	£23,644	£17,746
Value of Pottery made	£6720	£4200	£7200
Approximate cost of Buildings, &c.[b] ...	£21,006	£21,365	£23,621

[a] Of these numbers the following is an analysis :—

	1887.	1888.	1889.
Potteries only	2	1	3
Potteries and Brickyards.....	2	2	1
Brickyards only	38	42	44

[b] Partly estimated.

Tanneries and Fellmongeries.

	1887.	1888.	1889.
Number of existing Establishments	33	30	29
Number of Establishments working[a]	30	24[b]	24
Steam-power used in Establishments	8	8	8
Engines	9	10	10
Horse-power	150	122	99
Hand-power used in Establishments.....	22	16	16
Number of hands employed	196	157	176
Ditto Holders or Pits in use	589	489	567
Ditto Hides tanned..... Doz.	32,838	19,476	22,994
Ditto Skins stripped, &c. ..... Doz.	25,958	14,942	15,415
Value of Products—Leather	£51,240	£49,913	£42,154
Wool, &c.	£30,653	£28,569	£50,508
Approximate cost of Buildings, &c.	£29,860	£26,722	£25,030

[a] Of these numbers the following is an analysis :—

	1887.	1888.	1889.
Fellmongeries only	5	5	9
Tanneries only	10	7	4
Tanneries and Fellmongeries	15	12	11

[b] Particulars in respect of 3 Establishments estimated.

Soap and Candle Manufactories.

Districts in which industries are situated—Selby, Launceston, Glenorchy, Hobart.

	1887.	1888.	1889.
Number of Factories	4	5	5
Steam-power used in Establishments ...	3	4	4
Engines	3	6	9
Horse-power	53	74	41
Power (in 1 Establishment)	Hand power only	Hand power only	Hand power only
Number of hands employed	41	52	68
Quantity of Soap made ..... Tons	1050	1140	1110
Ditto Candles made ..... Tons	272	463	420
Ditto Soda made ..... Tons	274	328	274
Value of Soap made	£24,380	£24,540	£21,940
Ditto Candles made	£9002	£16,552	£16,840
Ditto Soda made	£1968	£1660	£1968
Approximate cost of Buildings and Equipment.....	£18,000	£19,900	£19,550

Flour Mills.

	1887.	1888.	1889.
Number of existing Establishments	50	49	52
Number of Establishments working	44	42§	44§
Steam-power used in Establishments	15	13	14
Engines	15	13	14
Horse-power	313	299	275
Water-power used in Establishments	27	26	27
Horse-power	338	296	327
Water and Steam-power used in Establishments	5	3	3
Engines	5	3	3
Horse-power	103	75	60
Number of Hands employed	119†	104	125
Grain operated upon, Wheat ..... Bushels	772,438†	668,792	621,964
Ditto, other Grain ..... Bushels	109,939†	93,726	107,218
Quantity of Flour produced ..... Tons	18,487†	14,165	15,021
Approximate value of Buildings & Equipment £	57,870‡	59,280	62,880

* Information given in respect of 49 Establishments. † Information given in respect of 44 Establishments. ‡ Information given in respect of 47 Establishments. § Working and returning information.

Woollen Mills.

	1887.	1888.	1889.
Number of Establishments supplying information	3	3	3
Power used in 2 Establishments, steam, 2 engines	= 30 H.P.	= 46 H.P.	= 26 H.P.
Ditto, 1 Establishment, water	= 25 H.P.	= 25 H.P.	= 25 H.P.
Number of Persons employed	68	72	73
Quantity of Wool used ..... lbs.	106,600	157,400	143,000
Value of Products ..... £	15,500	15,054	16,521
Estimated Capital invested in Buildings, &c. ..... £	20,500*	20,500*	21,340*

* Partly estimated.

Bark Mills.

	1887.	1888.	1889.
Number of Establishments supplying information	8	8	9*
Steam-power used in Establishments	7	7	7
Engines	7	7	7
Horse-power	117	97	104
Horse-power used in Establishment	—	1	1
Steam and Water-power used in Establishment	1	—	1
Engines	1	—	1
Horse-power	60	—	16
Number of Hands employed	60	59	65
Quantity of Bark ground ..... Tons	9445	9672	11,758
Value of Bark ground ..... £	63,005	76,115	94,457
Capital invested in Buildings, &c. ..... £	12,000	12,205	15,305

* 1 Establishment not working.

Engineering Establishments. (Including Foundries.)*

	1887.	1888.	1889.
Number of existing Establishments	15	14†	15†
Number of Establishments working	14	14	15
Steam-power used in Establishments	14	11	13
Engines	14	17	22
Horse-power	144	—	116
Gas-power used in Establishments	—	2	2
Engines	—	2	2
Horse-power	—	4½	4½
Steam and Gas-power used in 1 establishment	—	10 H.P.	—
Number of Persons	239	247	249
Approximate amount of Capital invested £	46,000	53,900	57,600
Approximate value of Products £	54,300	54,400	58,197

* Not including industries attached or subsidiary to other large Establishments, such as Railway workshops, &c. † Particulars in respect of two establishments estimated.

Summary of Principal Mines and Manufacturing Industries, 1889.

MINES AND QUARRIES.

	Number of Establishments, &c.	Hands employed.	Estimated Value of Products.	Estimated Value of Lands, Buildings, and Equipment.
			£	£
Gold Mining	..	1128	119,702	..
Tin	82	2227	321,900	..
Silver	11	71	7044	..
Copper	1	6	306	..
Coal	10	134	40,300	..
Quarries	32	128	5651	.
Total Mines and Quarries..	136	3694	494,897	..

MANUFACTORIES AND WORKS.

Saw-mills	64	917	134,171	131,418
Bark-mills	8	65	94,457	15,305
Brick-yards and Potteries	48	244	24,946	23,621
Engineering Establishments	15	249	58,197	57,600
Tanneries and Fellmongeries	24	176	92,662	25,030
Soap and Candle Manufactories	5	68	40,748	19,550
Woollen Mills	3	73	16,521	21,340
Gas Works	3	50*	...	162,300
Flour Mills	44	125	15,021	62,880
Jam Manufactories	7	123	24,720	36,850
Breweries	14	139	137,720	196,100
Total Manufactories	235	2229	..	751,994
GRAND TOTAL	371	5923	..	751,994

* Figures for 1888.

SUMMARY showing approximately the Relative Value of Agricultural and Pastoral Produce for the years 1859–1860, 1888–9, and 1889–90.

	1859-60.	1888-9.	1889-90.
Agricultural Produce—	£	£	£
Wheat	353,974	204,874	189,160
Barley	28,487	24,745	23,754
Oats	127,382	130,124	157,978
Other Cereals	21,485	27,216	39,238
Potatoes	125,958	249,703	271,031
Other Root Crops	62,889	137,781	104,376
Hay	276,520	233,160	289,100
Hops	...	37,483	34,252
Apples	29,702	91,856	125,753
Pears	6061	6014	8203
Other Fruits	10,083*	21,762	12,040
Other Garden and Orchard Produce		8487	
Total Agricultural Produce	1,042,541	1,173,205	1,254,885
Pastoral Produce—			
Milk, Butter, and Cheese	168,440	280,470	302,630
Value of Surplus Stock produced—			
Cattle	86,157	157,763	168,750
Sheep	80,250	134,069	145,446
Pigs	78,225	108,057	146,680
Horses	16,824	23,392	23,804
Wool exported and consumed locally	370,427	318,735	295,042
Live Stock exported	11,061	56,045	60,472
Total Pastoral Produce	811,654	1,078,531	1,142,824
Grand Total	1,854,195	2,251,736	2,397,709
Grand Total per head of Population	21·13	15·41	15·83
Agricultural Produce ditto	11·88	8·03	8·29
Pastoral Produce ditto	9·25	7·38	7·54

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CHAPTER XIV.

Law, Crime, and Protection.

Legislation.

During the year 1889 (51 Vict.) there was only one Session of Parliament, which opened on 9 July, 1889, and closed on 11 December, 1889, covering a space of 155 days, *i.e.*, 96 days less than in the preceding year.

During the Session there were introduced 88 Bills—of which 33 passed into law; 55 were lost, discharged, or laid aside. Full particulars regarding the Bills which engaged the attention of Parliament will be found in Statistics for the year, pp. 286-292.

Probates and Letters of Administration.

The following comparative abstract for the years 1888 and 1889 shows the extent of business transacted under the foregoing heading :—

	Probates.		Letters of Administration.		Both.		Average value of each Estate.
	Number.	Property sworn under.	Number.	Property sworn under.	Number.	Property sworn under.	
		£		£		£	£
1888.....	182	202,246	67	38,813	249	241,059	968
1889.....	161	253,557	64	43,190	225	296,747	1319
Increase	—	51,311	—	4377	—	55,688	351
Decrease	21	—	3	—	24	—	—

The average value of each property sworn under was—Probates, £1575; Letters of Administration, £675; both, £1319.

Bankruptcies.

There were 80 petitions in bankruptcy presented during the year 1889, of which 12 were compulsory, and the remaining 68 voluntary. The total liabilities of the voluntary bankrupts amount to about £37,884, and the assets in respect of the same are stated at £22,650, *i.e.*, 60 per cent.

As regards the 12 compulsory cases presented—11 of which were adjudicated bankrupt and 1 dismissed—the assets are stated to be

£13,564, and the liabilities, £19,994; *i.e.*, assets represented about 68 per cent. of the liabilities.

LITIGATION.

Civil Causes and other Cases tried.

The following is an Abstract of the Civil Causes and Cases tried in the various Courts during the year 1888, together with comparisons with the former year and with the average of the last decade:—

	1889.	1888.	Average of last Decade, 1880-89.	1889 Increase or Decrease as compared with— + Increase. — Decrease.	
				1888.	Average of Decade.
Supreme Court, Ordinary Jurisdiction—					
Summonses issued No.	448	404	431	+ 44	+ 17
Causes tried ..... No.	17	11	15	+ 6	+ 2
Claimed ..... £	...	...	...	...	...
Awarded..... £	14,194	251	2990	+ 13,943	+ 11,204
Supreme Court, under Small Debts Act—					
Summonses issued No.	326	434	193	— 108	+ 133
Causes tried ..... No.	191	244	102	— 53	+ 89
Claimed ..... £	12,233	11,069*	5498	+ 1164	+ 6735
Awarded..... £	4358	5787*	2170	— 1429	+ 2188
Court of Requests—					
Summonses issued No.	8227	7148	5625	+ 1079	+ 2602
Cases tried ..... No.	5101*	4750*	3280	+ 351	+ 1821
Claimed ..... £	46,771	36,719	31,922	+ 10,052	+ 14,849
Awarded..... £	28,396	23,692	18,805	+ 4704	+ 9591
All Courts—					
Summonses issued No.	9001	7986	6249	+ 1015	+ 2752
Causes & Cases tried No.	5309	5005	3397	+ 304	+ 1912
Claimed ..... £	59,004	47,788	37,420	+ 11,216	+ 21,584
Awarded ..... £	46,948	29,730	23,965	+ 17,218	+ 22,983

NOTE.—The sign minus (—) shows a decrease. * Including Judgments entered up.

Taken as a whole, it would appear from the foregoing abstract that the number of causes and cases tried in the various Courts during 1889 was more than those for the previous year by 304, or 6·07 per cent., and also of the average of the decade by 1912, or 56·29 per cent. Only 58·98 per cent. of the summonses issued were actually proceeded with, and of the latter the amounts awarded only represented 79·57 per cent. of the amounts claimed.

Divorce, Protection Orders, &c.

There were 3 petitions under this head during the year 1889.

Offences.

The classification now adopted is more in accordance with that of Victoria and other Australasian Colonies, and enables the Statistician more effectually to separate the purely civil cases from the criminal offences. Prior to year 1884 the Tasmanian classification included "non-payment of rates" and other purely civil cases among the "minor offences." This placed Tasmania at a disadvantage when comparisons were made with other countries.

The following abstract shows the number of Offences dealt with in the various Courts for the five years ending with the year 1889:—

COMPARATIVE Table showing the Number of Offences, Apprehensions, Convictions, and Acquittals for the Quinquennium 1885–1889.

Offences.	1885.	1886.	1887.	1888.	1889.	Mean of Five Years.
Numerical.						
Reported to the Police	6559	7255	6709	6669	7720	6982
Against the Person	570	536	519	454	500	516
Against Property	1013	1133	1283	1023	1053	1101
Others	4976	5586	4907	5192	6167	5365
Brought before Magistrates	5983	6586	5932	6164	7128	6358
Against the Person	560	511	527	454	475	505
Against Property	621	683	733	569	623	645
Drunkenness	1470	1507	1192	1145	1155	1293
Other Offences	3332	3885	3480	3996	4875	3913
Summarily convicted	4876	5253	4806	4595	5122	4930
Committed for Trial	71	76	89	99	105	88
Convicted after commitment	31	46	56	66	42	48
Discharged or acquitted in Magistrates' Courts	1036	1244	1037	1470	1901	1337
Ditto in Superior Court	12	13	26	19	16	17
Per 1000 *Persons.*						
Brought before the Magistrates	45·27	48·60	42·42	42·56	47·90	45·35
Against the Person	4·24	3·77	3·77	3·00	3·19	3·59
Against Property	4·70	5·04	5·26	3·94	4·19	4·62
Drunkenness	11·12	11·12	8·52	7·93	7·76	9·29
Other Offences	25·21	28·67	24·87	27·69	32·76	27·84
Summarily convicted	36·89	38·77	34·37	31·84	34·42	35·25
Per 10,000 *Persons.*						
Committed for Trial	5·37	5·61	6·36	6·86	7·05	6·25
Convicted after commitment	2·35	3·39	2·57	4·57	2·82	3·14
Percentage.						
Summary convictions to Cases brought before Magistrates	81·50	79·91	80·79	74·78	71·86	77·76
Percentage of Convictions to Commitments after commitment	43·66	60·53	40·45	66·68	40·00	50·26

Offences in Australasian Colonies and in the United Kingdom compared, for Quinquennium 1883–1887.

Numerical.

	Australasia.								United Kingdom.
	Victoria.	New South Wales.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.	Total.	
Apprehended or summoned:									
1883	48,974	72,231	13,804	13,104	4739	8039	23,090	183,981	..
1884	51,397	75,680	15,518	11,988	4831	6273	23,572	189,259	..
1885	52,566	77,092	15,763	10,406	4900	5983	23,103	189,813	..
1886	54,361	81,503	17,640	8202	5703	6586	21,662	195,657	..
1887	59,036	72,119	16,769	7122	5363	5932	20,336	186,677	..
Mean of 5 years	53,267	75,725	15,899	10,164	5107	6563	22,352	189,077	..
Summarily Convicted or held to Bail :									
1883	33,480	55,463	9788	11,378	3450	5394	16,994	135,947	..
1884	34,456	57,897	11,620	10,425	3477	4843	17,968	140,686	..
1885	34,180	59,345	11,451	8901	3436	4876	17,804	139,993	..
1886	36,599	62,268	12,841	6850	3980	5253	16,705	144,496	..
1887	38,742	53,614	12,449	6032	3562	4806	15,557	134,762	..
Mean of 5 years	35,492	57,717	11,630	8717	3581	5034	17,006	139,177	..
Committed for Trial :									
1883	606	1606	427	305	72	88	459	3563	20,251
1884	695	1550	555	293	64	70	509	3736	19,442
1885	768	1540	538	240	86	71	428	3671	18,971
1886	756	1594	611	228	95	76	536	3896	19,439
1887	820	1402	480	208	121	89	646	3766	18,343
Mean of 5 years	729	1539	522	255	88	78	515	3726	19,289
Convicted after Commitment :									
1883	350	1008	193	166	46	33	231	2027	15,003
1884	407	928	274	127	40	39	241	2056	14,765
1885	442	785	267	133	51	31	236	1945	14,029
1886	492	957	289	121	54	46	286	2245	14,143
1887	506	854	247	102	75	56	334	2174	13,592
Mean of 5 years	439	906	254	130	53	41	266	2089	14,306

OFFENCES in Australasian Colonies and in the United Kingdom compared during Quinquennium 1883–1887 in relation to Population.

Particulars.	Australasia.								United Kingdom.
	Victoria.	New South Wales.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.	TOTAL.	
Apprehended & Summoned:	Proportion per 10,000 persons.								
1883	537·6	865·9	515·3	438·2	1517·3	646·5*	436·2	613·8	..
1884	550·3	859·2	526·4	388·3	1494·3	486·6	429·4	604·7	..
1885	548·4	828·1	510·5	332·3	1438·1	452·7	408·0	585·1	..
1886	550·8	831·7	530·5	262·0	1533·7	486·0	372·1	581·0	..
1887	579·0	705·4	472·7	227·3	1286·1	424·2	341·0	535·2	..
Mean of 5 years	553·2	818·0	512·0	329·6	1433·9	499·2	397·3	583·9	..
Summarily Convicted:									
1883	367·5	664·8	365·4	380·5	1104·6	433·7*	320·1	453.4	..
1884	368·9	657·3	394·2	337·8	1075·5	377·2	327·3	449·7	..
1885	356·6	637·5	370·8	258·4	1008·5	368·9	314·5	429·1	..
1886	370·8	639·1	386·2	218·8	1070·4	387·7	285·3	429·6	..
1887	379·9	524·4	350·9	192·5	854·2	343·7	260·8	386·4	..
Mean of 5 years	368·7	624·6	373·5	277·6	1022·6	382·2	301·6	429·4	..
Committed for Trial:									
1883	6·7	19·3	15·9	10·2	23·1	7·1	8·7	11·9	5·7
1884	7·4	17·6	18·9	9·5	19·8	5·5	9·3	11·9	5·4
1885	8·0	16·5	17·4	7·7	25·3	5·4	7·6	11·1	5·2
1886	7·7	16·3	18·4	7·3	25·6	5·6	9·2	11·6	5·3
1887	8·0	13·7	13·5	6·6	29·0	6·4	10·8	10·8	5·0
Mean of 5 years	7·5	16·6	16·8	8·2	24·6	6·0	9·1	11·6	5·3
Convicted after Commitment:									
1883	3·8	12·1	7·2	5·6	14·7	2·7	4·4	6·8	4·2
1884	4·4	10·5	9·3	4·1	12·4	3·0	4·4	6·6	4·1
1885	4·6	8·4	8·7	4·3	15·0	2·4	4·2	6·0	3·9
1886	4·9	9·8	8·7	3·9	14·5	3·4	4·9	6·7	3·9
1887	4·9	8·4	7·0	3·3	18·0	4·0	5·6	6·2	3·9
Mean of 5 years	4·5	9·8	8·1	4·2	14·9	3·1	4·7	6·4	4·0
Proportion of Convictions after Commitment to Committed:	Percentage.								
1883	57·8	62·8	45·2	54·4	63·9	37·5	50·3	56·8	74·1
1884	58·6	59·9	49·4	43·3	62·5	55·7	47·4	55·1	75·9
1885	57·8	53·5	49·7	55·4	59·3	43·7	55·1	54·1	73·9
1886	65·1	60·0	47·3	43·0	56·8	60·5	53·6	57·6	72·8
1887	61·7	60·9	51·5	49·0	62·0	62·9	51·7	57·7	74·2
Mean of 5 years	60·2	59·4	48·6	49·1	60·9	52·0	51·6	56·2	74·1
Proportion of Summary Convictions to Apprehensions and Summonses:									
1883	68·36	76·79	70·90	86·82	72·80	80·80	73·38	74·50	..
1884	67·04	76·50	74·88	86·96	71·97	77·20	76·23	74·33	..
1885	65·02	76·98	72·64	77·76	70·12	81·50	77·06	73·32	..
1886	67·34	76·84	72·79	83·52	69·80	79·91	76·67	74·04	..
1887	65·63	74·34	74·24	84·70	66·42	81·02	76·50	72·20	..
Mean of 5 years	66·67	76·29	73·09	83·95	70·22	80·08	75·96	73·67	..

Analyses of Offences for which various Persons were Apprehended or Summoned in Australasia.

	Numerical.				Per 1000 Persons.				
	Against the Person.	Against Property.	Drunkenness.	Other Offences.	Against the Person.	Against Property.	Drunkenness.	Other Offences.	All Offences.
Victoria—									
1883	3875	4566	12,408	28,125	4·25	5·01	13·62	30·87	..
1884	3648	4373	12,938	30,438	3·91	4·68	13·85	32·59	..
1885	4159	4233	13,580	30,594	4·34	4·42	14·17	31·92	..
1886	4190	4776	14,528	30,867	4·24	4·84	14·72	32·28	..
1887	4017	5020	15,578	34,421	3·94	4·92	15·28	33·75	..
Mean of 5 years	3978	4593	13,806	30,889	4·13	4·77	14·33	32·28	..
New South Wales—									
1883	10,569	6894	23,178	31,490	12·79	8·26	27·78	37·74	..
1884	10,059	7160	25,428	33,033	11·42	8·13	28·87	37·50	..
1885	9518	7209	27,493	32,872	10·22	7·74	29·53	35·31	..
1886	10,135	7355	27,722	36,291	10·34	7·51	28·29	37·03	..
1887	8903	8017	24,146	31,053	8·71	7·84	23·62	30·37	..
Mean of 5 years	9837	7327	25,593	32,948	10·70	7·90	27·62	35·59	..
Queensland—									
1883	2369	1327	4505	5603	8·84	4·95	16·81	20·92	..
1884	2543	1687	5117	6171	8·63	5·72	17·36	20·94	..
1885	2230	1748	5508	6277	7·22	5·66	17·84	20·33	..
1886	2091	1956	5748	7845	6·29	5·88	17·29	23·59	..
1887	2587	2126	6000	6056	7·29	5·99	16·91	17·07	..
Mean of 5 years	2364	1769	5376	6390	7·65	5·64	17·24	20·57	..
South Australia—									
1883	784	698	4533	7054	2·64	2·44	15·16	23·59	..
1884	776	711	3938	6563	2·51	2·30	12·76	21·26	..
1885	643	755	3361	5647	2·10	2·41	10·73	18·03	..
1886	570	724	2566	4342	1·82	2·31	8·20	13·87	..
1887	437	614	2090	3981	1·39	1·96	6·67	12·70	..
Mean of 5 years	642	700	3298	5517	2·09	2·28	10·70	17·89	..
Western Australia—									
1883	455	372	3912		14·57	11·91	125·25		..
1884	410	335	4086		12·68	10·36	126·39		..
1885	403	323	4174		11·83	9·48	122·53		..
1886	474	414	4815		12·75	11·13	129·49		..
1887	472	532	4359		11·32	12·76	104·53		..
Mean of 5 years	442	395	4269		12·63	11·13	121·64		..
Tasmania—									
1885	560	621	1470	3332	4·24	4·70	11·12	25·21	45·27
1886	511	683	1507	3885	3·77	5·04	11·12	28·67	48·60
1887	527	733	1192	3480	3·77	5·26	8·52	24·87	42·42
1888	454	569	1145	3996	3·00	3·94	7·93	27·69	42·56
1889	507	623	1155	4843	3·41	4·19	7·76	32·54	47·90
Mean of 5 years	512	646	1294	3907	3·64	4·62	9·29	27·80	45·35
New Zealand—									
1883	1667	2479	7494	11,450	3·15	4·68	14·16	21·63	..
1884	1712	2438	7154	12,268	3·12	4·44	13·03	22·35	..
1885	1785	2198	7012	12,108	3·15	3·88	12·39	21·39	..
1886	1617	2393	6297	11,355	2·78	4·11	10·82	19·51	..
1887	1660	2537	5661	10,478	2·78	4·25	9·49	17·57	..
Mean of 5 years	1688	2409	6724	11,532	3·00	4·27	11·88	20·49	..

Crimes in various Countries.

It will be seen from the foregoing tables that Tasmania takes up a most creditable position as compared with any other country in freedom from Drunkenness and Crime.

As regards Minor Offences—other than those classed under Offences against Property, against the Person, and Drunkenness—it is almost useless or misleading to institute comparisons between any two countries; for such is the variability in local laws respecting order and welfare, that it may not unfrequently happen that the largeness of such transgressions may be entirely due to extra trivial municipal by-laws not applied or enforced in country districts, and not forming legal offences in many countries. The only satisfactory course, therefore, will be to make extended comparisons as regards all offences in respect of different years within the same country. With different countries the only safe course to pursue will be to confine comparisons strictly to groups which may be deemed to be equally applicable in all countries, viz., Serious Crimes tried before the Superior Courts; and, as regards Inferior Courts, only those that are common to all countries, such as Offences against Property, Offences against the Person, and Drunkenness.

Minor Offences.—Offences in Australasian Colonies: Average of last Five Years.

The following is the order of the proportion of Offences per year in each Colony of Australasia in relation to population, beginning with the highest:—

MINOR OFFENCES.

(*a*) *Order of Colonies in reference to Offences against Property*—Per 1000 persons.

I.	1. Western Australia	11·13
	2. New South Wales	7·90
	3. Queensland	5·64
II.	4. Victoria	4·77
III.	5. Tasmania	4·62
	6. New Zealand	4·27
	7. South Australia	2·28

(*b*) *Offences against the Person*—Per 1000 persons.

I.	1. Western Australia	12·63
	2. New South Wales	10·70
	3. Queensland	7·65
II.	4. Victoria	4·13
III.	5. Tasmania	3·64
	6. New Zealand	3·00
	7. South Australia	2·09

(*c*) *Cases of Drunkenness**—Per 1000 persons.

I.	1. New South Wales	27·62
	2. Queensland	17·24
II.	3. Victoria	14·33
III.	4. New Zealand	11·98
	5. South Australia	10·70
	6. Tasmania	9·29

* The Statistics for Western Australia give no information respecting Drunkenness.

(*d*) *Offences against the Person, against Property, and Drunkenness*—Per 1000 persons. (Western Australia omitted.)

I.	1. New South Wales	46·22
	2. Queensland	30·53
II.	3. Victoria	23·23
III.	4. New Zealand	19·25
	5. Tasmania	17·55
	6. South Australia	15·07

(*e*) *Percentage of Summary Convictions in relation to Total Number of Cases brought before Minor Courts.*

In this case the order is inverted, as it is apparent that either the lower percentages indicate a greater degree of laxity on the part of the magistrates, or a greater number of improper cases brought under the notice of magistrates by the police.

Those Colonies, therefore, which show the smaller proportion of cases are placed first in order of defect.

	Per cent.
1. Victoria	66·67
2. Western Australia	70·22
3. Queensland	73·09
4. New Zealand	75·96
5. New South Wales	76·29
6. Tasmania	80·08
7. South Australia	83·95

In the above analyses it will be observed that there is a wonderful uniformity in the order in which the several Colonies stand to each other in relation to the number of offences brought before Magistrates' Courts.

As in each case the figures relate to the average of the last five years, the comparisons are free from the abnormal conditions of any one year, and hence the comparative order may be more confidently accepted as affording a fair picture of the comparative freedom from such offences in each Colony. In making comparisons of this kind the Statistician has grave responsibilities; for in their interpretation not only must he allow for his own personal equation of error, due to possible bias in favour of his own country, but he must see that no dissimilar matters are included under a common category. Where such incongruous matters are compared under a misleading common general term, such as various items under "Offences against the Public Welfare," in different places, the elaborate percentages and proportions to population of the Statistician serve a mischievous purpose in tricking the mind to error. This is the reason why in the more precise comparisons just given no attempt has been made to include the items commonly grouped under the heading "Offences against Public Welfare," "Offences against Good Order," &c. It is apparent that the major portion of such offences are not merely not of a grave character, but the nature of the act is no offence of itself except as regards occurrence at a particular *place* or at a particular *time*. For example, certain Municipal By-laws, such as "Vehicles must walk over a crossing," although constituting a large number of such offences, only apply to certain crossings in certain towns, and not an offence elsewhere. Again, peculiar local conditions require special local laws in different countries. For example, in Tasmania breaches against the following matters constitute 75·1 per cent.

of all the "Offences against Public Welfare," viz.—Breaches against "Californian Thistle Act," "Rabbit Act," "Codlin Moth Act," "Scab Act," "Vaccination Act." Of what value, therefore, would the general comparison be in different countries, where not only are the laws different in respect of the same object, but where the objects deemed to be subjects of legal concern are themselves altogether different? It is reasonable, therefore, to assume that elaborate comparisons under such hopelessly variable conditions are worse than useless, for they lead to false conclusions.

As regards the three principal groups selected specially for comparison these objections do not apply, although it is probable that the facilities and machinery for the detection of the offences against good order, such as drunkenness, are more perfect in towns than in country districts. But this objection applies alike to all countries, and can only be fairly measured by dealing with town and country populations separately. This is a far more reasonable course than that ordinarily pursued, as when figures giving widely different results are, without proper evidence, referred to greater or lesser care on the part of Collectors of Statistics, or greater laxity or zeal on the part of the police or others responsible for carrying out the common laws. All statistical comparisons would be useless if such assumptions are freely made at the mere call of local sympathies.

Guarding against such improper diversions, it may reasonably be concluded that the order of the various Colonies in freedom from the more important minor offences—viz., offences against the person, property, and drunkenness—are as follows, beginning with the lowest :—

1. South Australia.
2. Tasmania.
3. New Zealand.
4. Victoria.
5. Queensland.
6. New South Wales.
7. Western Australia.

South Australia, Tasmania, and New Zealand thus occupy the highest position among Australasian Colonies in freedom from crime as regards minor offences.

Serious Crimes.

In crimes of a serious nature the classification of various countries does not present any material difference, and hence comparisons made on the basis of mean population are not open to the same grave objections as when attempts are made in this direction in respect of the minor offences, of which such a large percentage are more or less artificial, or trivial departures from purely local provisions. The presence or absence of stringent provisions for the detection of crime or the preservation of order, although an important matter as regards deductions to be drawn in respect of *minor offences*, is not likely to disturb the conclusions drawn from comparisons made in respect of *serious crimes*.

If Tasmania takes up a creditable position as compared with other Colonies as regards freedom from minor offences, the following table in

respect to serious crimes—dealt with in Superior Courts—proves that Tasmania continues to contrast most favourably with other countries in comparative freedom from crimes of a serious character.

Major Offences or Serious Crimes dealt with by Superior Courts in Australasia and the United Kingdom.

The following abstracts show the order of the proportion of serious crimes in each country in relation to population, beginning with the highest. The figures relate to the mean per year of the last five years recorded :—

(a) Committed for Trial—Per 10,000 Persons.

1. Western Australia	24·6
2. Queensland	16·8
3. New South Wales	16·6
4. New Zealand	9·1
5. South Australia	8·2
6. Victoria	7·5
7. Scotland	6·38
8. Tasmania	6·0
9. Ireland	5·89
10. England and Wales	5·09

It is gratifying to find that Tasmania ranks next to England and Wales—lower than any other Australian colony, and lower even than Scotland in freedom from crimes of a serious character.

(b) Convicted after Commitment.

1. Western Australia	14·9
2. New South Wales	9·8
3. Queensland	8·1
4. Scotland	4·9
5. New Zealand	4·7
6. Victoria	4·5
7. South Australia	4·2
8 England and Wales	3·9
9. Ireland	3·2
10. Tasmania	3·1

Here Tasmania, with Ireland, stands in the most favourable position as regards all other countries referred to in the smallness of conviction for serious crimes in relation to population.

(c) Proportion of Convictions in relation to Commitments for Trial.

1. England and Wales	77·2
2. Scotland	76·9
3. Western Australia	60·9
4. Victoria	60·2
5. New South Wales	59·4
6. Ireland	54·3
7. Tasmania	52·0
8. New Zealand	51·6
9. South Australia	49·1
10. Queensland	48·6

With respect to the proportion of convictions to commitments for trial, England and Wales stand highest, and South Australia and

Queensland lowest. It is not certain, however, that the numbers *committed for trial* stand for the same thing in different countries; for in Tasmania, owing principally to the errors in judgment of a country magistracy, a considerable proportion of the cases are improperly so referred; and the cases actually *tried* are usually much under the number *committed for trial by Magistrates*. Thus, although the mean proportion of convictions for the last ten years was 53·37 per cent. of cases *committed for trial*, the mean proportion in relation to actual cases *tried* was as high as 74·22 per cent.

Drink, Drunkenness, and Crime.

The following table shows for the last twelve years the extent of crime, the amount of drunkenness, and the actual consumption per head of wines, spirits, and malt liquors:—

Year.	Per 10,000 of Mean Population.			Per Head of Mean Population.	
	Apprehensions and Summonses.‡	Apprehensions for Drunkenness.	Committed for Trial in Superior Courts.	Wines and Spirits consumed.	Malt Liquors consumed.
	No.	No.	No.	galls.	galls.
1875 ...	*Nil.*	*Nil.*	*Nil.*	·928	...
1876 ...	545·6*	173·8	9·18	·978	...
1877 ...	495·0	126·5	9·60	1·051	...
1878 ...	485·6	126·6	10·41	1·043	...
1879 ...	510·8	135·2	9·89	·950	...
1880 ...	472·2	135·8	10·30	·882	...
1881 ...	407·8	123·3	7·67	·921	9·365
1882 ...	479·5	151·4	7·70	1·061*	10·035
1883 ...	494·5	152·0	7·08	1·013	10·205*
1884§ ..	355·8	122·8	5·45	·838	9·036
1885 ...	343·5	111·2	5·37	·860	9·237
1886 ...	374·8	111·2	5·61	·987	8·949
1887 ...	339·0†	85·2	6·36	·810	8·773†
1888 ...	346·3	79·3	6·86	·847	8·830
1889 ...	401·4	77·6†	7·05	·685†	9·086

* Maximum. † Minimum. ‡ Less cases of drunkenness. § The figures prior to 1884 are relatively somewhat higher than they ought to be, owing to the inclusion of petty cases of non-payment of rates, &c., subsequently included among *civil cases*.

These figures present many interesting considerations with reference to drink, drinking, and crime. It is curious to observe—although there is evidently a perceptible relationship between drunkenness and other minor offences—the immediate relationship between drunkenness, the average yearly consumption of intoxicating liquors, and serious crimes is far from being apparent. This will be observed by reference to the signs indicating the year when the maximum and minimum were reached under each specific head. Whatever indirect effects spring from the excessive use of intoxicating liquors, the extent of actual drunkenness and the year's drinking does not correspond with the actual extent of serious crime within any one year during the last decade in Tasmania. It is excessive drinking by the same individual within a brief space of time which immediately induces the state of drunkenness, and not the

quantity taken over a long yearly period; and hence it is quite conceivable that individual excesses within, say each 24 hours, may be more frequent in some cases where the mean quantity *per head per year* of total population may be comparatively low—and, conversely, there may be fewer cases of individual excess in drinking in some cases where the average of drinking *per head per year* of total population is comparatively high. Generally, however, the mean per year is a good, if not an infallible index to increase or decrease in drinking habits. Unfortunately, the figures relating to actual consumption of malt liquors cannot be ascertained for years prior to 1881.

These observations are confirmed by the following excellent abstract of the consumption of alcoholic drinks in various countries, prepared by Mr. Hayter (Year Book of Victoria, 1888-9, p. 361, Vol. II.):—

CONSUMPTION of Alcoholic Drinks in various Countries.

Countries.	Average Annual Consumption per Head.			
	Beer.	Wine.	Spirits.	Equivalent in Beer.
	Gallons.	Gallons.	Gallons.	Gallons.
France	4·53	16·52	·85	64·29
Denmark	..	..	4·48	53·76
Holland	19·05	·49	2·08	45·48
United Kingdom	28·74	·43	·59	37·11
New South Wales	16·70	·74	1·39	35·60
Germany	19·38	1·32	·95	34·74
Queensland	9·55	·69	1·85	33·82
Victoria	16·41	1·01	1·12	32·88
Austria-Hungary	6·83	4·84	·63	28·91
South Australia	14·37	1·59	·80	28·74
United States	10·74	·37	1·34	27·93
Switzerland	8·15	2·11	1·04	26·96
New Zealand	9·31	·27	·92	21·16
Tasmania	10·00	·24	·69	19·00
Sweden	2·52	·20	1·27	18·36
Canada	2·98	·12	·99	15·22

NOTE.—The averages for the Australasian Colonies have been calculated over a period of three years; those for the other countries extend over various periods.

It is here significant that Tasmania stands the lowest among the 16 countries in the amount of alcoholic drinks consumed. As it has been shown already that for drunkenness and crime Tasmania also stands freer than any other Colony of Australasia, it speaks much in favour of the temperance movement, whose members are animated by the conviction that a great proportion of the crime of various countries arises from drink. Mr. Hayter seems inclined to doubt whether the Statistics of Tasmania fully gauge the local extent of drink consumed, because "the published Statistics contain no account of distilleries or of spirits made;" but this is an unfortunate assumption on his part, for *there are no distilleries in Tasmania*, and the figures are in perfect harmony with the smaller amount of actual drunkenness in the island.

Punishments in Gaols and Penal Establishments.

During 1889 there were altogether 1393 prisoners confined at various times and for different periods, in the various Gaols and Penal Establishments, of which 1031, or 74·01 per cent., were males, and 362, or 25·99 per cent., were females.

On the average there were only 125 males and 17 females confined per day during the whole year, and the average duration of confinement per individual prisoner was equal to 50 days.

Comparisons with the previous year are best appreciated in a tabular form, thus :—

	1885.	1886.	1887.	1888.	1889.
Prisoners confined at various times—					
Males	1164	1276	1348	1144	1031
Females	581	588	520	449	362
TOTAL	1745	1864	1868	1593	1393
Average number confined continuously per day—					
Males	168	169	177	152	175
Females	48	56	53	40	17
TOTAL	216	225	230	192	192
Average duration of confinement per individual prisoner.....(days)	45	44	45	44	50

Prisoners and Paupers.

It has already been shown that Tasmania is remarkably free from crime. It may here be stated that, in relation to the past, the old inmates of Gaols and Pauper Establishments are fast dying out, and with respect to the latter it is necessary to say they are of foreign importation, as may be inferred from the mean age of Male Paupers being 68 years, and more clearly still from the fact that the natives of Tasmania and Australia together do not amount to 5 per cent. of the foreign element. Apart from these considerations, it is creditable under any circumstances to find that all *inmates of prisons* only average per year 1 to every 751 of the population, while the total number of Paupers, mostly belonging to another part of the Empire, only represents 1 to every 177 of the relatively small population of the Colony with which, as a contrast, it has no natural relation. The following figures show how remarkably fast the old foreign element in our Gaols and Pauper Establishments is dying out :—

Year.	Prisoners.		Paupers.	
	No.	Per 10,000.	No.	Per 10,000.
1873	644	62·17	1113	107·46
1874	546	52·40	1081	103·75
1875	466	44·84	1084	104·31
1876	394	37·67	1046	100·03
1877	328	30·85	994	93·51
1878	356	32·80	980	90·30
1879	351	31·56	917	82·46
1880	337	29·66	864	76·05
1881	293	24·97	895	76·29
1882	286	23·69	827	68·52
1883	249	20·02	801	64·41
1884	219	17·06	808	62·94
1885	195	14·75	780	59·09
1886	225	16·61	820	60 52
1887	230	16·45	810	57·92
1888	192	13·30	814	56·40
1889	192	12·90	806	54·16

That the inmates of Prisons and Pauper Establishments have declined in a most remarkable manner during the last 17 years is clearly shown by these tables. As regards Prisoners, the relative decline is as much as 79·25 per cent. in the 17 years.

What better proof could be given of the fact that pauperism and crime are simply noxious foreign plants, which find no congenial soil in Tasmania for their propagation? Tasmania's advance in material progress is not half so cheering as this indication of her power to eliminate from her social system the noxious poisons of pauperism and crime.

Crime and Education.

The following Abstract gives particulars regarding the education of the 1393 cases already dealt with in respect of frequency of crime :—

EDUCATION of Prisoners in Gaols, 1889.

	Numerical.			Centesimal.		
	M.	F.	Total.	M.	F.	Total.
Unable to read	171	119	290	16·59	32·87	20·82
Able to read only	44	26	70	4·27	7·18	5·02
Able to read and write	813	217	1030	78·85	59·95	73·94
Of superior education	3	...	3	·29	...	·22
TOTAL	1031	362	1393	100·00	100·00	100·00

These proportional figures differ little from those given for 1887 and 1888. Although the larger number of offences (73·94 per cent.)

have been committed by persons who could both read and write, it must be remembered that a very much larger proportion of the population over 15 years of age is composed of persons of this particular class; and if the number of prisoners yielded by each class be compared, as in the following table, it will be found that the association of crime with the degrees of ignorance is most marked. Only 1·15 per cent. of the prisoners are under the age of 15 years, and hence in comparisons it is most desirable to eliminate all ages under 15 from the estimated population.

EDUCATION of Prisoners and Population over 15 years of age compared, 1889.

Class.	Estimated Population 15 years and over, 1889.	Number of Prisoners during 1889.	Proportion of Prisoners yielded per 10,000 of each respective class.	
			1889.	1888.
Unable to read	11,326	290	256·048	367·933
Able to read only ...	6969	70	100·444	126·525
Able to read and write	75,459	1033	136·895	154·682
TOTAL ...	93,754	1393	148·580	178·351

Although the class who are unable to read and write thus contribute in Tasmania proportionately fully four times as many criminals as the class who are able to read and write, and while undoubtedly it is clear that the state of ignorance in itself is immediately responsible for a considerable number of offences against society, it must be always borne in mind, as ably shown by Herbert Spencer (p. 379, Social Statics), that "Ignorance and crime are not cause and effect; they are coincident results of the same cause."

Ages of Prisoners.

The following table shows to what extent certain groups of ages contribute to the criminal list for the year 1889:—

Under 15 years of age	16	1·15
15 to 25 years of age	417	29·93
25 to 65 ditto.....	776	55·71
65 and over.....	184	13·21
TOTAL	1393	100·00

Birth-places.

The following is a statement showing the percentage for 1889 of prisoners born in different countries; viz.—Australasian Colonies, including Tasmania, 54·49 per cent. England and Wales, 21·82 per cent. Ireland, 14·00 per cent. Scotland, 5·82 per cent. Other British Possessions, 1·89 per cent.; and Foreign Countries, 2·44 per cent. Birth-places unknown, ·14 per cent.

Protection—Civil and Military Forces.

The following is a brief statement of the strength of the Civil and Military Forces for the years 1885, 1886, 1887, 1888, and 1889 :—

	1885.	1886.	1887.	1888.	1889.
Police Force—					
Municipality of Hobart .....No.	49	49	49	49	49
Ditto, Launceston .....No.	35	35	35	35	35
Rural Municipalities .....No.	119	118	117	116	111
Territorial Police Force .....No.	115	110	114	115	116
Total Police Force.....	318	312	315	315	311
Defence Force—					
Southern Division .....No.	666	447	416	405	287
Northern Division .....No.	320	289	423	396	337
Auxiliary Force .....No.	—	—	—	1459	1378
Total Defence Force ...	986	736	839	2260	2002
Grand Total ...No.	1304	1048	1154	2575	2313

It would appear, during 1889, that in relation to every 1000 of the population there were 2·09 Police and 13·45 Volunteers; and in relation to area, there were for each 100 square miles 1·18 Police and 7·64 Volunteers.

The total cost of the Territorial and Municipal Police Force for 1889—£38,595—is less than the previous year (£39,004) by £409. The cost of maintaining the Defence Forces (Volunteers) during 1889 is stated to be £10,369, which, taken together with £4971 for proportion of interest paid on Defence Construction, is equal to 2·25 per cent. of the Total General Expenditure, or about 2·06*s.* per head of the population.

CHAPTER XV.

Intellectual, Moral, and Social Provision.

Education.

The Statistics regarding the education of children at the school-age (7 to 14 years) must necessarily be imperfect so long as it is not made compulsory to register all private schools, together with the names of professional or paid private instructors. If this were done, it would be an easy matter to make a yearly census on a well-chosen school-day, which would enable us to gain more satisfactory information with respect to the working of the Act, which provides for the compulsory education of all children within the limits of the ages 7 to 14.

In the Census year 1881 the following results were obtained, which enable us to some extent to gauge the value of our system of education in respect of children :—

School Attendance, 1881.

Ages 7–14.		Per cent. to Total.
Attending schools receiving Government aid	7545	39·05
Ditto private schools	4521	23·40
Receiving instruction at home	3075	15·91
Children not at school	1984	10·22
Unspecified	2197	12·42
Total persons 7 and under 14	19,322	100·00

The percentages of all ages receiving instruction were as follows :—State schools, 44·08 per cent.; private schools and home instruction, 55·92 per cent.

It is somewhat unsatisfactory to find so large a number as 12·42 per cent. unspecified in ages 7–14; but from comparisons made with the yearly statistics furnished by the Director of Education it is evident that the numbers returned in the census table correspond more closely with the average number registered on the school rolls than with the average actual attendance; and therefore it is clear that at least 10 per cent. of the children at school-age failed to comply with the compulsory provisions of "The Education Act." This is in accord with the general results of education in ages of 5 and under 20, where it has already been shown that the proportion of persons who could not write was equal to 17·75 per cent. of the total number of persons living within this age-group.

State Schools, 1889.

With respect to the years 1885, 1886, 1887, 1888, and 1889, the following table gives full particulars regarding State Schools:—

	1885.	1886.	1887.	1888.	1889.
	No.	No.	No.	No.	No.
Estimated number of children living in Tasmania between the ages of 7 and 14 years	22,071	22,628	23,497	24,100	24,979
State Schools—					
Schools	204	209	215	220	229
Instructors	296	317	335	344	367
Ditto per 100 scholars on Roll	1·92	1·98	2·03	2·01	2·04
Scholars—					
Distinct individuals on the Roll	15,418	16,014	16,527	17,125	17,948
Ditto per 100 of the estimated number of children living between the ages of 7 and 14 years	69·86	70·77	70·34	71·06	71·85
Average on roll	10,531	11,109	11,383	12,002	12,460
Ditto per 100 of the estimated number of children living between the ages of 7 and 14 years	47·71	49·09	48·44	49·80	49·88
Average attendance	7465	7866	8182	8730	8973
Ditto per 100 of the estimated number of children living between the ages of 7 and 14 years	33·82	34·76	34·82	36·22	35·92
	£	£	£	£	£
Expenditure from public and private sources	34,999	35,763	38,957	41,629	41,067
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Ditto from public sources, per each child in average daily attendance	3 12 3	3 9 5	3 14 8	3 14 10	3 10 5
Ditto from private sources, ditto	1 1 6	1 1 6	1 0 6	1 0 7	1 1 1
Ditto from both sources, ditto	4 13 9	4 10 11	4 15 2	4 15 5	4 11 6

As compared with the previous year, it appears the number of children on the rolls of the State Schools is almost the same proportionately when compared with the estimated number of children living at the "school age" 7 to 14. Although in relation to the latter the number of children on the roll is equal to 71·85 per cent., the average attendance appears to be about one-third (35·92) per cent. It must be borne in mind, however, that in addition to the State Schools the number of children receiving instruction in private schools or at home, at school age, according to results of the last census, represent 39·31 per cent. of the whole. Of the 17,948 children on the rolls during 1889, it may be roughly estimated that only three-fourths, or 13,461 children, are actually within the school age, and hence the true proportion of children at this age upon the State School rolls only represents 75 per cent. of the whole.

Private Schools.

Private Schools still occupy an important position in Tasmania. During the year 1889 there were 88 Private Schools returned, having an attendance of 3542 scholars, of whom 1707 were boys and 1835 girls. The scholars attending them, however, appear to be fewer as compared with State Schools, as they only represent 16·48 per cent. of all scholars attending State and Private schools. The number of children receiving instruction at home cannot be ascertained, but in a thinly scattered population it is probable that it is considerable.

Council of Education.

The following is a synopsis of the Degrees, Scholarships, and Exhibitions conferred during 1889, together with the aggregate numbers conferred since 1860, also the numbers actually in force on 31st December, 1889 :—

	Conferred **1889.**	Total conferred since **1860.**	Number actually conferred or in force 31 December, **1889.**
Degrees of Associate of Arts.....	20	345	345
Dry Scholarships	1	17	1
Minor Scholarships.....	2	23	4
Tasmanian Scholarships*.....	2	43	8
Council of Education Exhibitions	5	86	17

* Those who gain this distinction are entitled to £200 a year for four years, tenable at a British University.

The cost of the administration of this important branch of the Tasmanian educational system amounted to £2649 in 1889, *i.e.*, equal to 6·49 per cent. of the total public expenditure in connection with education.

Principal Grammer Schools and Colleges.

Of the Principal Grammar Schools and Colleges, sixteen have furnished returns for the year 1889. Nine of these are described as denominational, viz., Church of England, 5; Roman Catholic, 2; Wesleyan, 2; and 7 undenominational. None of the Superior Schools or Colleges receive Government aid directly, although in practice and design it is evident that the Degree of Associate of Arts, the Minor Scholarships, and the chief prize, the Tasmanian Scholarships, under the control of the Tasmanian Council of Education, are intended to bring the superior instruction afforded by these institutions into harmonious and systematic relation with the various sources of primary education. The following is a statement regarding accommodation, average attendance, &c. in respect of the institutions referred to :—

Accommodation.

Accommodation available for 2368 Students. Teachers, 103.

AVERAGE ATTENDANCE.

	1889.	1888.	1887.	1886.
	No.	No.	No.	No.
Under 6 years	173	116	112	126
6 years and under 15	787	911	881	1222
15 years and upwards	337	413	336	345
TOTAL	1297	1440	1329	1693

There are 19 bursaries or scholarships, ranging generally between £6 and £20 each, immediately in the gift of seven out of the sixteen principal Grammar Schools. On the average there is about one instructor to 13 scholars.

Technical Schools.

Evening Schools have been successfully established in Hobart and Launceston for the purpose of imparting knowledge in technical subjects to the youth of both sexes. The school in Hobart was first opened in February, 1888, and in Launceston towards the close of the same year. The following is an abstract of the subjects taught; viz.—

CLASS I.—*Technical Art Instruction*—Five evenings per week; including Mechanical and Freehand Drawing, Use of Scales and Instruments, Practical Geometry, Building Construction, Modelling and Carving, &c. Average attendance per night, 21.

CLASS II.—*Mathematics and Applied Mechanics*—Four evenings per week; including Elementary Physics, Laws of Forces, Theoretical Mechanics, &c. Average attendance per night, 17.

CLASS III.—*Engineering*—Two evenings per week; including practical instruction in Machine Construction, &c. Average attendance per night, 14.

CLASS IV.—*Commercial Economy*—Two evenings per week; including Arithmetic, Writing, Correspondence, and Book-keeping. Average attendance per night, 12.

CLASS V.—*Chemistry*—Five evenings per week. Average attendance per night, 7.

Total number on Roll on 30th November, 1889—Hobart, 131; Launceston, 22.

The Fees for all classes are as follows:—

1st grade, or elementary ..... 9*d.* per week.
2nd grade, or advanced ..... 1*s.* per week.

The cost of these classes in Hobart and Launceston for the year 1889 is stated to be £1433.

Besides the regular classes in Hobart, popular lectures on technical subjects were voluntarily delivered on several occasions by gentlemen interested in the success of these schools; and a special course of instruction in cookery was well attended by ladies (70 on roll) during the months of December (1889) and January (1890). At present the accommodation for students is very limited, but this difficulty in Hobart will soon be removed, as the Government are erecting suitable buildings as a Technical College in Bathurst-street; and provision is made for a Chemical Laboratory, where instruction in chemistry and mineralogy may be imparted.

These Schools are under the direction of Local Boards of Advice, the members of which are appointed and act directly under the Minister of Education. The Schools are much prized by apprentices and others, who at this stage are enabled to gain practical knowledge of many subjects of the greatest importance to them in their special crafts, and for which no proper provision has been made hitherto in ordinary systems of education.

Industrial and Ragged Schools.

In connection with the various Ragged Schools there was an average daily attendance during the year 1889 of 322 children (161 boys and 161 girls); the average number on the rolls was 596. The cost of maintenance was £572, equal to 19*s.* 2·16*d.* per scholar per year, of which Government contributed 89·86 per cent. As compared with the previous year the average attendance of children was less by 33, and the expenditure shows a decrease of £62.

In the various Industrial Schools there were maintained during the year on an average 149 children (30 males and 119 females), at a cost of £2787, or £18·70 per head. Of the total subscriptions the General Government subscribed about 53·94 per cent. The expenditure has increased £59 as compared with 1888.

Training Schools.

The average number of Inmates in the Training Schools during the year was 56, (40 boys and 16 girls). The cost of maintenance was £1715, or £30 12*s.* 5*d.* per head.

Public Libraries.

So far as information can be obtained, there were 35 Public Libraries open to the public during the year 1889. In all they contain 54,206 volumes. The receipts for the year amount to £2362, in addition to £987 subscribed by the Government. These Libraries are open at convenient hours during working days, and appear to be well attended.

Tasmanian Museum and Botanical Gardens.

Tasmanian Museum.—During 1889 the Tasmanian Museum has received many valuable additions to its collections, and these have been very much improved as regards arrangement and classification by its

present indefatigable Curator, Mr. A. Morton. Receipts, £569. Expenditure, £648.

Botanical Gardens.—The Botanical Gardens continue to be well patronised for purposes of recreation and instruction. The receipts amounted to £909, of which £109 was derived from the sale of plants, and £800 was received from the Government. The expenditure, £915, was more than the receipts by £6.

Royal Society of Tasmania.

The Report of the Royal Society shows no diminution of interest, and the original papers read on various branches of science have generally been of a very high order. The published *Papers and Proceedings* are becoming more important year by year, and it is evident from a study of their contents that, whilst the status of the Society as a scientific body has been conserved, there have been discussed many questions of great public utility which cannot fail to produce a beneficial influence. Valuable donations have been made to the Library during the year. The Fellows of the Society number about 200.

Hospitals.

The following statement contains some of the more interesting particulars regarding the various Hospitals and Hospitals for the Insane for the years 1885, 1886, 1887, 1888, and 1889 :—

	1885.	1886.	1887.	1888.	1889.
Institutions ..... No.	7	8	8	8	10
Accommodation for.. No.	644	650	715	674	682
Individual cases treated, In-patients No.	2401	2501	2763	2634	2512
Ditto, Out-patients No.	3723	3686	2894	2249	5626
In-patients treated as Insane ..... No.	429	383	401	398	409
Ditto per cent. to total In-patients....	17·86	15·31	14·51	15·11	16·28
Persons died..... No.	218	226	277	398	249
Percentage of Deaths to cases treated	9·08	9·04	10·03	15·11	9·91
Daily average in Hospitals ..... No.	497	490	538	520	533
Total cost..... £	28,092	28,177	29,141	27,153	29,262
Cost per case per year	£11 4*s.* 9*d.*	£11 5*s.* 4*d.*	£10 10*s* 11*d*	£10 6*s.* 2*d.*	£11 12*s.* 1*d.*
Proportion of Government aid to total contribution..	79·52	78·25	79·92	80·15	80·91

As regards the Cost per head, and per case, of the various Hospitals, the following is a comparative statement regarding the various Institutions, according to the order of least cost :—

Cost per Head of Hospital Inmates.

	1885. Cost per Head per Year.	1886. Cost per Head per Year.	1887. Cost per Head per Year.	1888. Cost per Head per Year.	1889. Cost per Head per Year.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. Hospital for Insane, Cascades	36 2 8	38 13 9	39 19 3	37 1 2	31 8 5
2. Hospital for Contagious Diseases, Launceston	...	38 4 2	40 0 0	57 3 6	34 5 11
3. Hospital for Insane, New Norfolk	41 13 0	42 12 6	37 10 5	35 16 4	40 0 8
4. Hospital for Contagious Diseases, Cascades	117 11 9	98 1 9	69 7 10	71 3 2	72 1 0
5. General Hospital, Launceston	67 10 9	70 14 5	70 16 7	75 6 11	74 18 7
6. General Hospital, Hobart	90 18 0	91 12 1	90 17 6	92 0 0	93 17 3
7. New Norfolk Cottage Hospital	...	...	...	...	134 5 0
8. Waratah Hospital	...	262 15 6	287 6 8	397 5 2	134 8 0
9. Campbell Town Hospital	...	272 10 7	216 16 9	84 9 2	242 16 7

Cost per Case.

	1885. Cost per Case.	1886. Cost per Case.	1887. Cost per Case.	1888. Cost per Case.	1889. Cost per Case.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
1. New Norfolk Cottage Hospital	...	...	...	...	3 11 8
2. Hospital for Contagious Diseases, Launceston	...	7 12 10	4 15 10	5 7 2	4 7 7
3. General Hospital, Launceston	5 15 9	5 11 6	5 11 2	6 2 3	6 7 1
4. General Hospital, Hobart	7 5 10	6 9 1	6 11 4	6 15 0	7 19 4
5. Devon Cottage Hospital	...	...	...	...	9 5 3
6. Hospital for Contagious Diseases, Cascades	14 13 11	16 16 11	7 1 4	6 5 7	9 7 11
7. Campbell Town Hospital	7 14 9	15 11 6	11 12 9	4 16 3	14 12 6
8. Hospital for Insane, Cascades	32 19 10	35 1 3	37 14 9	36 8 0	29 14 8
9. Hospital for Insane, New Norfolk	33 0 3	36 9 1	31 16 6	30 13 4	34 17 7
10. Waratah Hospital	39 1 9	25 0 6	52 4 11	36 2 3	45 14 9

Charities.

Pauper Establishments.

The following is a general statement regarding the persons maintained in the Pauper Establishments in Hobart and Launceston during the years 1885, 1886, 1887, 1888, and 1889 :—

	1885.	1886.	1887.	1888.	1889.
Accommodation for Inmates, No. ...	866	892	882	882	891
Individual cases maintained.....	1664	1752	1748	1658	1632
Average maintained—					
Male, No.....	565	609	607	610	604
Female, No.	215	211	203	204	202
Total	780	820	810	814	806
Persons maintained per 10,000 of the population	59	61	58	56	54

As regards age of paupers, it is interesting to note that 90·26 per cent. of the whole were over 55 years of age. As regards education, 48·41 per cent. could read and write ; 10·29 per cent. could read only; and 41·30 per cent. could neither read nor write. It is noteworthy that the educational standard of paupers is considerably below that of the imprisoned criminals for the same year. The result cannot even be attributed to the extreme age of the former, for the Census of 1881 shows that, of the persons at ages 55 and upwards of the general population, 63·6 per cent. could read and write. Relatively to population the number of Paupers has slightly decreased as compared with the previous year. In 1882 there was 1 pauper to every 147 persons; in 1883 there was 1 pauper to every 155 persons ; in 1884 there was 1 pauper to every 163 persons ; in 1885 there was 1 pauper to every 170 persons ; in 1886 there was 1 pauper to every 165 persons ; in 1887 there was 1 pauper to every 172 persons ; in 1888 there was 1 pauper to every 177 persons ; and in 1889 there was 1 to every 188 persons.

The total expenditure for the year was £11,553, or £14 6*s.* 8*d. per head* average of daily inmates. These figures differ little from those of the previous year. Nearly the whole of the cost of the Pauper Institutions is provided for by the General and Imperial Governments.

Out-door Relief and Benevolent Societies.

Besides the charities administered through the regular Pauper Establishments, the following abstract shows the extent of relief or provision made by the Benevolent Societies in Hobart and Launceston, and by the Out-door Relief and Boarding-out Systems under the control of the Administrator of Charitable Grants :—

PERSONS relieved or provided for.

Name.	1888.			1889.		
	No. relieved or provided for.	Amount.	Amount per Head.	No. relieved or provided for.	Amount.	Amount per Head.
		£	£ s. d.		£	£ s. d.
Benevolent Societies—						
Hobart	483	584	1 4 2	453	753	1 13 3
Launceston	474	803	1 13 10	462	894	1 18 8
TOTAL	957	1387	1 8 11	915	1647	1 16 0
Out-door Relief	1163	3903	3 7 2	469	3483	3 1 0½
Boarding-out System	121	1683	13 18 3	116	1657	14 5 8
GRAND TOTAL	2241	6973	3 2 3	1500	6787	4 10 6

Public Charities generally.

Exclusive of the large expenditure in connection with Hospitals, Ragged and Industrial Schools, it would appear from statistical tables that the Pauper and Benevolent Institutions alone expended a sum of £18,340 in the relief of 3804 distinct individual cases, equal to a sum of £4 16*s.* 5*d.* per case, or 2*s.* 5·58*d.* per head of population, of which the General Government contributed £16,836, or 91·79 per cent.

The total amount expended by the General Government upon Charities of all descriptions. including hospitals, for the year 1889, is £55,602, equal to 8·15 per cent. of the total General Expenditure for the year, and representing 7·47*s.* per head of the population.

Life Assurance.

The following information has been obtained with respect to Life Assurance on the 31st December of the years 1885, 1886, 1887, 1888, and 1889:—

	1885.	1886.	1887.	1888.	1889.
Societies, No.	8	10	10	8	8
Policies in force, No. ...	7956	8601	9019	9394	10,137
Ditto, Amount.....	£2,216,673	£2,393,438	£2,495,532	£2,576,187	£2,816,652
Policies void during year, No.	583	382	507	568	386
Ditto, Amount.....	£111,050	£72,450	£121,085	£113,686	£133,086
Average amount assured per Policy-holder	£278	£278	£277	£274	£278
Ditto, per Society	£277,084	£239,344	£249,553	£322,023	£352,082
Ditto, per head of Population.....	£16 15*s.* 5*d.*	£17 13*s.* 3*d.*	£17 16*s.* 10*d.*	£17 17*s.* 0*d.*	£18 18*s.* 7*d.*
Policies secured per 100 of Population	6·01	6·35	6·45	6·51	6·81
Estimated ditto per 100 of adult ditto	11·81	13·17	13·38	13·50	14·14

Thus it would appear from the above table that the business of the various Societies has made steady progress during the last five years.

Building Societies.

From the following Statement it will be observed that there are 5 Societies in operation in Tasmania, with 4373 Members, possessing 16,049 shares, or on the average 3·67 shares per Member. The total income during 1889 was equal to £271,796, and the advances made during the same period amounted to £137,096. The working expenses were £4319, and assets £543,014.

	1886.	1887.	1888.	1889.
Number of Societies	6*	6*	6*	5*
Number of Members	2788	3480	3954	4373
Number of Shares	15,078	18,311	20,372	16,049
Advances made during 12 months prior to date of last balancing	£100,537	£162,290	£154,879	£137,096
Total Income during 12 months prior to date of last Balance Sheet (exclusive of deposits)	£156,730	£156,151	£187,632	£271,796
Working Expenses during 12 months prior to date of last Balance Sheet	£2907	£3584	£3802	£4319
Assets at date of last Balance :—				
Balance due on Mortgage Securities (not including prospective interest)	£291,417	£394,772	£474,596	£526,007
Amount invested in other Securities, and Cash	£9225	£15,446	£9462	£17,007
Liabilities at date of last Balance :—				
To the Holders of Shares	£139,880	£155,400	£204,043	£232,395
To Depositors and other Creditors	£154,632	£229,894	£274,738	£303,081
Amount of Deposits at date of last Balance	£138,794	£215,604	£267,479	£290,142

* All of which are Permanent.

Friendly Societies.

Owing to the alteration of the laws relating to Friendly Societies, commencing on 1st January, 1888, the mode of keeping accounts and preparing yearly returns has been so much affected that it is almost impossible as yet to get a complete set of returns.

The difficulties in some cases are owing to the fact that many of the Societies have not hitherto kept their books in such a manner as would yield the information required by the amended Act, "Friendly Societies Act, 1888." It is also necessary to state that many of the Societies are small, and are for economy's sake managed by handicraftsmen, and, although a very intelligent class as such, they are not always skilled in book-keeping; and however willing the Secretary for the time may be to comply with the new requirements, his perplexities often tempt him to shirk or postpone complying with the frequent calls made by the Statistician for the necessary information. It is estimated that there are 98 Societies in Tasmania, but of these only 89 Societies complied with the Act in forwarding returns to the Statistician.

The Progress made during the last Ten Years.

The progress made by the various Societies during the ten years 1880-89, is indicated by the following comparison:—

	1880.	1885.	1889.
Branches and Districts	47	83	89
Members	3937	7541	8692
Receipts £	13,282	20,893	26,307
Expenditure £	10,415	18,728	23,104
Capital £	30,026	49,723	59,523

From the figures for 1889 it is interesting to notice that 8692 persons, equal to 5·74 per cent. of the total population, or 21·44 per cent. of the adult males, belong to some Friendly Society. When we consider the information forwarded by 89 out of an estimated number of 98 lodges which have rendered returns, it is clear that the interests of Friendly Societies are of the widest national importance, and it is probable that over one in every five adult males belong to some Society.

During the year 1885 the financial condition of the various Friendly Societies of the Colony was specially examined for the Government by Mr. Evan F. Owen, the able Actuary for Friendly Societies in the Department of the Government Statist of Victoria. In the valuable report prepared by Mr. Owen he indicated generally that the scale of periodical payments adopted by the various Societies was too low to secure the objects for which liabilities are incurred; that the rates of entrance fee, graduated in respect of age, were, in many cases, either imperfectly appropriated or unsatisfactory in their determination; and that the present values of all possible assets were at least from 11·2 to 36·2 per cent. below the estimated present values of liabilities.

Mr. Owen's recommendations were—to raise the rate of contributions for benefits; to abolish the entrance fee, and in lieu thereof to adopt a graduated rate of weekly contributions. He also recommended amendments in the existing law, and suggested the establishment of a department similar to that in Victoria, to which would be entrusted registration, periodical audit and valuation, and other important matters affecting the welfare of Societies. The Bill passed in 1888 was designed to meet the greater part of these requirements.

Receipts and Expenditure, Year 1889.

The following is an abstract of the various tables relating to the Societies for the year 1889:—

	Subordinate Lodges.				District Lodges.			
	Sick and Funeral Fund.	Incidental and Management Fund.	Other Funds.	Total.	Funeral Fund.	Management Fund.	Other Funds.	Total.
Receipts—	£	£	£	£	£	£	£	£
Contributions	13,031	6963	953	20,947	2130	442	523	3095
Initiation and Clearance Fees	591	295	...	886	...	...	...	...
Interest and Rent	972	268	73	1313	415	118	168	701
Funeral Donations	458	...	...	458	...	...	...	...
Other Receipts	467	1032	136	1635	...	343	24	367
Total Receipts	15,519	8558	1162	25,239	2545	903	715	4163
Expenditure—								
Sick Pay	6895	...	...	6895	...	...	32	32
Medical Expenses, &c.	2270	5001	...	7271	...	...	...	...
Levies to District	2383	564	37	2984	...	...	...	...
Funeral Donations	885	...	..	885	2027	...	660	2687
Management	493	1512	233	2238	...	468	...	468
Other Expenditure	448	989	774	2211	77	451	...	528
Total Expenditure	13,374	8066	1044	22,484	2104	919	692	3715
Balance—								
At beginning of year	30,593	2952	1556	35,101	14,747	508	5169	20,424
At close of year	32,738	3444	1674	37,856	15,188	492	5192	20,872
Disposal of Funds—								
Investments at Interest in Banks	...	...	...	23,478	...	...	...	11,669
Halls, &c.	...	...	...	3136	...	...	...	2000
Other Investments	...	...	...	7996	...	...	...	6672
Bank account current	...	...	...	2718	...	...	...	548
Cash in hands of Trustees	...	...	...	1251	...	...	...	55
TOTAL	...	...	...	38,579	...	...	...	20,944

Total Funds Invested, £59,523, or an average of £6 16*s.* 11*d.* per member.

Deaths and Sickness of Members.

Out of 8692 members during 1889, 73, or 0·83 per cent., died. 1125 members were admitted by initiation and clearance; and there were 736 departures, 544 of which were due to arrears. There were upon the sick list 1235 members, or 14·21 per cent. The average sickness of the 1235 members was above the average of former years, being equal to 36·58 days per sick member, and the sick relief afforded to them by the various Societies, apart from the regular provision for medical attendance amounted to £6895, or £5·58 per sick member per year, equivalent to 15*s.* 10*d.* per head of the total number of members on the lists.

Ages and Conjugal Relationship.

There were only 3673 wives of members classified as "registered wives;" but this does not indicate the full number of married persons. Of the 8692 members, the ages of 7448 only have been ascertained, as follows:—

Years.	Ages.	Per cent.
	No.	
Under 20	511	6·86
20–25	1412	18·96
25–30	1662	22·31
30–35	1365	18·33
35–40	946	12·70
40–45	616	8·27
45–50	381	5·12
50–55	225	3·02
55–60	160	2·15
60–65	72	0·97
65–70	54	0·72
70 and over	44	0·59
TOTAL	7448	100·00

The mean age of the 7448 members—only 7·45 per cent. of which were over 50 years—is, therefore, nearly 31·53 years.

FRIENDLY SOCIETIES.—Decennial Return.

Year.	*No. of Lodges and Districts which filed Returns.*	*No. of Members.*	*Receipts.*	*Expenditure.*	*Capital.*
			£	£	£
1880	47	3937	13,282	10,415	30,026
1881	43	4164	13,909	11,250	30,240
1882	50	4815	15,258	12,639	34,345
1883	66	5944	15,940	14,126	40,502
1884	75	6545	17,826	18,020	43,210
1885	83	7541	20,893	18,728	49,723
1886	92	8154	22,133	20,225	52,468
1887*	—	—	—	—	—
1888†	80	7151	23,038	20,376	53,312
1889	89	8692	26,307	23,104	59,523

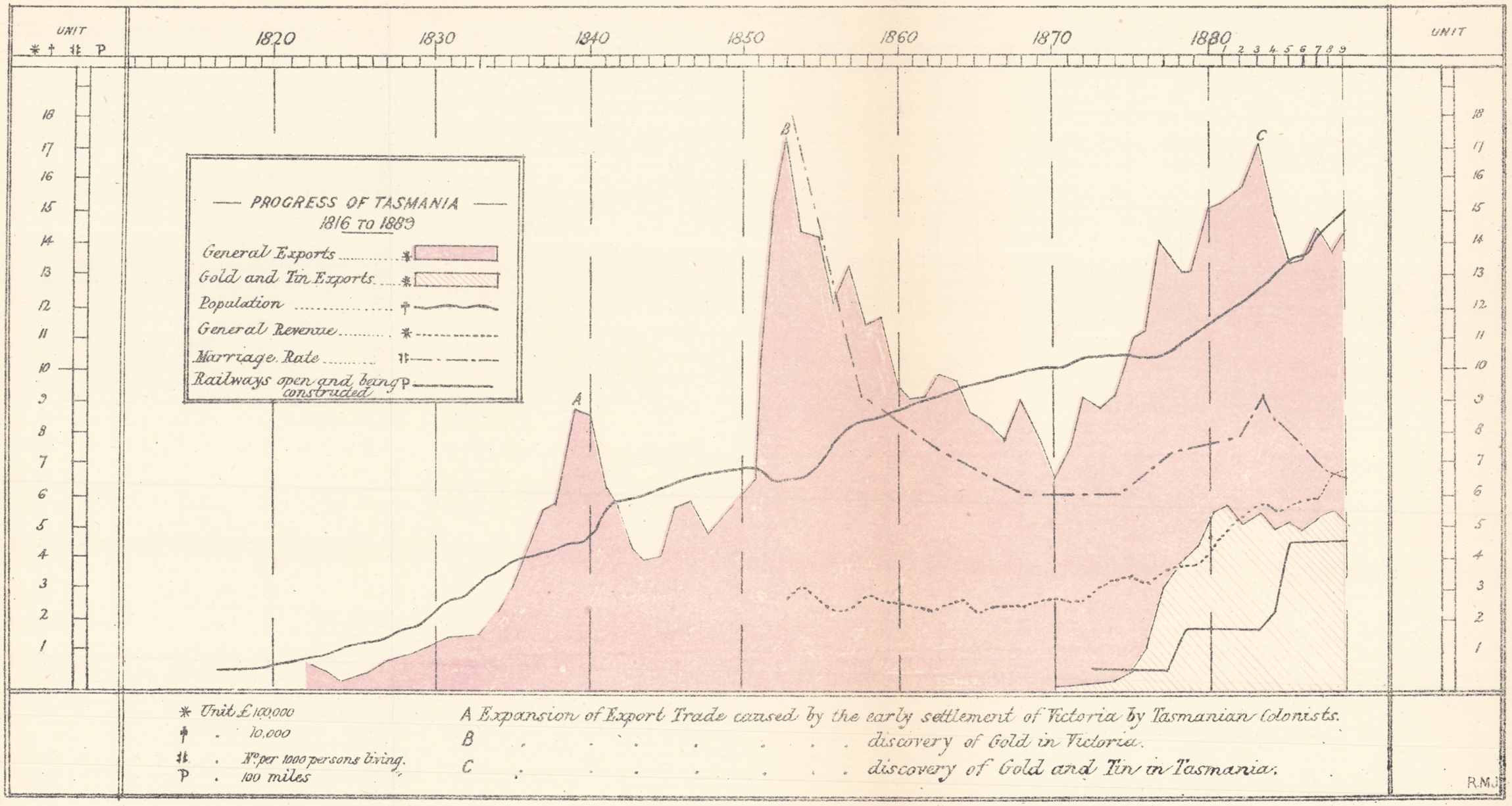
* Owing to the introduction of new Act it was impossible to obtain Returns for this year.

† Total number of Lodges estimated, 99, of which only 80 furnished Returns.

Police Provident Fund.

The invested Provident Funds of the Territorial and Urban Police Force amount to £17,477. There are 188 members. The number of Members who retired during the year 1889 was 30, and the retiring allowances made were £587.

— PROGRESS OF TASMANIA 1816 TO 1889 —



CHAPTER XVI.

Progress of Australasia and Summary of General Statistics.

Progress of Tasmania.—1816 to 1889.

To enable those who desire to study more satisfactorily the "Progress of Tasmania" within this period, a coloured diagram has been prepared, by means of which the movements of the more important characteristics can be more rapidly and faithfully appreciated. The features selected as best suited to show graphically the varied ups and downs of the Colony's progress since the year 1816 are (1) General Exports; (2) Gold and Tin Export; (3) Population; (4) General Revenue; (5) Marriage Rate. The three most notable heights in export trade, marked A, B, & C, were reached in the years 1839, 1853, and 1885 respectively. The first was caused by the early settlement of Victoria by Tasmanian Colonists; the next height was caused by the second emigration to Victoria, associated with expanded trade consequent upon the discovery of gold in that Colony, then known as Port Phillip; the third height marks the existing progress caused by increased prosperity of the industries within the Colony's own borders consequent upon the discovery and development of Gold and Tin, the value of which, in 1889, represented nearly one-third of the total exports of Tasmania. It is noteworthy that the two first expansions of trade caused by external attractions were associated with a loss of population and capital; while the third expansion, due to the development of new industries within our own borders, is associated with a marked increase in population and capital.

Australasian Statistics, 1889.

The following pages contain comparative tables relating to the Statistics of the seven principal Colonies of Australasia for the period 1878–1889. The extent and significance of the rapid advance made by the whole group since the year 1850 may be gathered from the following comparative abstract:—

Progress of Australasia, 1850, 1879, 1888, *and* 1889.

The following table shows the progress of Australasia within a period little more than one-third of a century, namely, between the years 1850 and 1889. The figures for 1888 and 1879 are also given to mark the rate of progress going on at the close of this eventful period in the history of Australasia.

Area, 3,161,457 Square Miles.

	1889.	1888.	1879.	1850. ‡
Number of independent British Colonies*	7	7	7	5
Population	3,786,827	3,678,046	2,632,256	483,365
Exports £	65,585,855	57,605,472	41,276,857	4,661,043
Imports £	68,849,089	65,256,881	47,378,783	4,447,375
General Revenue £	28,563,622	27,558,497	15,927,691	1,188,770
Public Debt £	173,843,848	166,462,542	77,892,183	57,917
Railways, miles open and being constructed	12,901	12,037	5560	*Nil.*
Ditto, cost of construction £	101,934,596	93,501,617	44,951,903‖	*Nil.*
Telegraphs miles wire	82,816	78,353	43,949	*Nil.*
Land in cultivation acres	9,070,479	8,616,401	6,371,238	496,945
Cereals — Wheat acres	3,870,346	3,569,849	2,743,434	§
Cereals — Wheat bushels	42,480,131	26,205,977	36,346,950	§
Cereals — Oats acres	738,216	616,254	564,948	§
Cereals — Oats bushels	21,198,226	14,971,267	17,766,875	§
Cereals — Barley acres	169,420	157,528	137,421	§
Cereals — Barley bushels	3,759,184	2,972,972	3,506,191	§
Live Stock—				
Sheep No.	101,268,084	96,580,640	67,015,409	22,128,626
Cattle No.	9,497,665	9,211,801	7,944,229	2,290,566
Horses No.	1,542,957	1,486,819	1,076,898	186,535
Wool exports £	26,244,267	22,243,966	18,668,848	2,843,031
Gold and Tin exports† including specie from New South Wales and Victoria £	10,526,848	10,277,221	5,357,224	*Nil.*

* Not including Fiji.

† Partly estimated. The gold of Victoria and New South Wales is largely minted prior to export.

‡ The following are the names of independent British Colonies declared prior to 1850 :— (1) New South Wales, originally embracing the districts now known as Queensland and Victoria; (2) South Australia; (3) Western Australia; (4) Tasmania; (5) New Zealand.

§ Not ascertained.

‖ Exclusive of Western Australia.

The rate of progress is best appreciated by marking the growth of population. The mean rate of progress during the last quinquenniad is equal to 110,757 persons per year, or 3·45 per cent. The population has more than doubled itself since the year 1866. If we take 4½ per cent., which is about the mean yearly rate of increase for the last decade, the population of the Australasian Colonies will be about six and a half millions before the close of the year 1900.

External and International Trade has also shown a remarkable expansion. Since 1879 it has increased £45,779,304, *i.e.*, 52 per cent. Railways within the same period have also been rapidly pushed forward, the cost of which represented £101,934,596 in 1889.

Although the Public Debt of Australasia has increased from £57,917 in 1850 to £173,843,848 in 1889, it must be borne in mind that, unlike the debt of old European States, it is an index of profitable investment, not the waste of war; and it is noteworthy to observe that a considerable portion of the debt has been contracted in respect of 1862

miles of railway now being constructed, while £101,934,596 of the debt is actually represented by the Railways (11,040 miles) now being worked, which in 1889 yielded a profit of 3·08 per cent. on original cost of construction.

Comparative Progress of the various Colonies.

Although much depends upon the wisdom and energy of men in framing wise laws and promoting industries, the developmental progress of young colonies depends, in a greater measure than is generally acknowledged, upon the extent and the natural conditions of the lands open to colonising efforts.

The whole fabric of the earlier stages of a colony depends mainly on the agricultural and pastoral industries; and successful enterprise in these, again, depends largely upon the natural facilities offered in the various lands open for selection to immigrants from other densely populated centres. Among the principal factors which determine the progress of settlement in the earlier stages of a colony's history are climate, suitability of soil for agricultural or pastoral pursuits, and nearness of producing centres to market or seaboard. At the beginning the first-class or more accessible areas attract the attention of settlers, but the rate of settlement in each colony greatly diminishes as the poorer or less accessible areas are approached. Thus, in the earlier stages, the smaller areas open to settlers in Tasmania and Victoria show a much more rapid development, owing to their accessibility, more favourable climate, and richer soil attracting a larger proportion of the continuous stream of enterprising immigrants from European centres. The very much greater rate of settlement, however, is soon checked by the limited areas of the smaller colonies, and the stream of immigration gradually diverges to the less favourable climate, and the second-class pastoral land of the larger colonies, as in New South Wales and Queensland.

Broadly speaking, the development of a new colony passes through three great successive predominating stages, partly overlapping—

(1.) The predominance of the Pastoral stage.
(2.) The predominance of the Agricultural stage.
(3.) The predominance of the Manufacturing stage.

The last of these stages is a long way off, so far as the Australasian Colonies are concerned, because density of population, involving a struggle for existence among the labouring classes, is essential to the establishment of great manufacturing industries which can successfully and independently compete with other countries in the external or open markets of the world; but pastoral and agricultural industries alone cannot support many persons to the square mile of territory, and hence, in young colonies, the rate of development, so far as population is concerned, is usually less rapid when all the available lands have been encroached upon, and when the manufacturing stage is approached. It must be confessed, however, that the relative progress of Victoria, as compared with New South Wales (the former having developed much more rapidly than the latter), does not show, as yet, any diminution in its rate of development, even although it has now arrived at a stage

which shows a density of population per square mile of territory (1272) three and a half times greater than that of the older or mother colony.

It is utterly misleading, by means of aggregates, to discuss the relative development of Colonies whose areas vary in extent in the relative proportions of from 1–40; thus—

Area Square Miles.

Tasmania	26,215,	equivalent to	1
Victoria	87,884,	„	3⅓ nearly.
New Zealand	104,032,	„	4 „
New South Wales	310,700,	„	12 „
Queensland	668,497,	„	25½ „
South Australia	903,690,	„	34 „
Western Australia	1,060,000,	„	40 „

It is true the population of the Colony of New South Wales (which is nearly four times the size of Victoria) has actually surpassed the population of Victoria during the last year, but this does not afford any proof of a superior rate of development.

The only means whereby the rate of progress can be measured in Colonies, whose aggregates are mainly increased by fresh areas brought under occupation, is by relation to total area, as in the following comparison :—

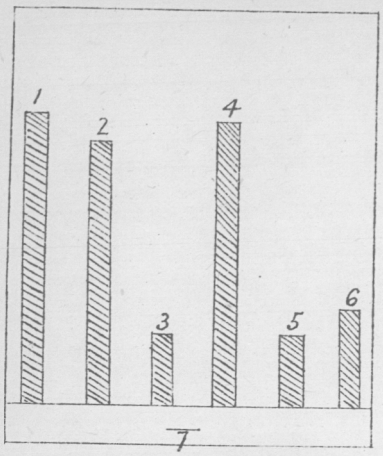
PROGRESS of Population per Square Mile during the two Quinquenniads.

Colony.	Density of Population per Square Mile.			Increase per Square Mile.	
	1879.	1884.	1889.	Quinquenniad ending 1884	Quinquenniad ending 1889
1. Victoria	10·11	10·94	12·72	0·83	1·78
2. New Zealand	4·29	5·41	5·94	1·12	0·53
3. Tasmania	4·24	4·98	5·78	0·74	0·80
4. New South Wales	2·31	2·97	3·61	0·66	0·64
5. Queensland	0·32	0·46	0·61	0·14	0·15
6. South Australia	0·28	0·35	0·35	0·07	0·00
7. Western Australia	0·03	0·03	0·04	0·00	0·01
All Colonies	0·86	1·02	1·20	0·16	0·18

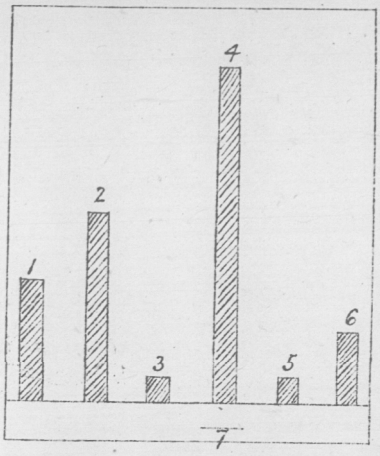
From this analysis we learn that, excepting South Australia, there has been a greater rate of relative progress in population in all Colonies during the last quinquenniad than during the preceding one; although the order of the rate of progress for each Colony and the rate for Australasia as a whole have been somewhat disturbed: the order of greatest progress relatively being :—1, Victoria; 2, Tasmania; 3, New Zealand; 4, New South Wales; 5, Queensland; 6, West Australia; 7, South Australia.

COMPARATIVE DEVELOPMENT OF VARIOUS COLONIES

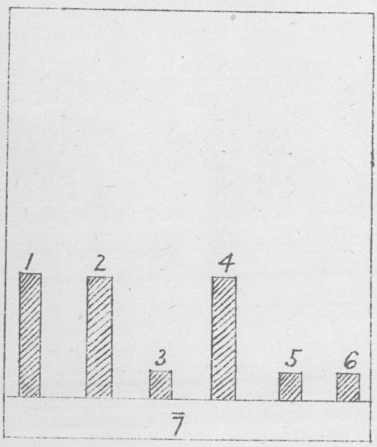
VICTORIA



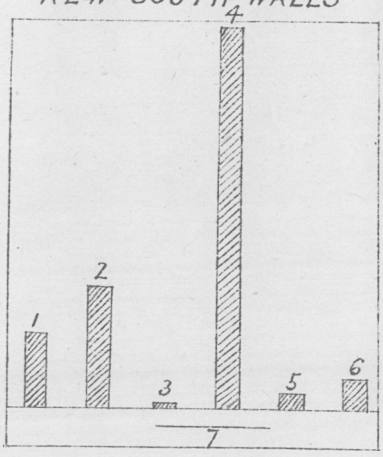
NEW ZEALAND



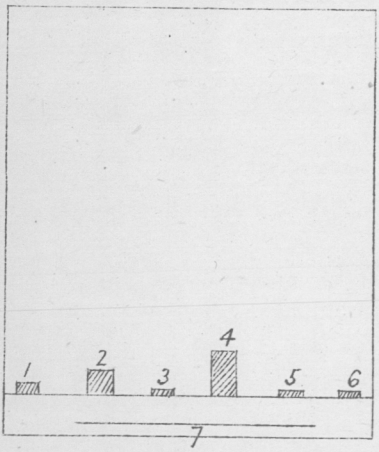
TASMANIA



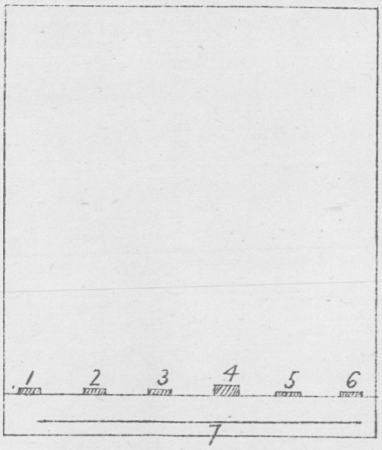
NEW SOUTH WALES



QUEENSLAND



SOUTH AUSTRALIA



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1 Population per square mile of territory
2 Exports (domestic) ditto
3 Land in cultivation ditto
4 Sheep ditto
5 Railways per square mile of territory
6 Public debt ditto
7 Relative size of each colony

R M Johnston

That this rate of relative progress is not merely confined to population is shown by the following comparison, the items selected indicating the special local advantages, whether natural or artificial :—

	Victoria, 1889.	New Zealand, 1889.	Tasmania, 1889.	N. S. Wales, 1889.	Queensland, 1889.	S. Australia, 1889.	W. Australia, 1889.
1. Relative size of each Colony	3⅓	4	1	12	25½	34	40
2. Population per 100 square miles... ..... No.	1257	588	568	355	59	35	4
3. Export of Domestic Products ditto ..... £	11,125	8655	5503	5608	1124	409	71
4. Acres in cultivation ditto ..... No.	2989	1494	1863	305	35	317	11
5. Sheep ditto ..... No.	12,382	14,840	5918	16,127	2164	707	223
6. Railways, miles open and being constructed per 10,000 do. No.	328	195	180	72	39	20	8
7. Public Debt per 100 ditto ..... £	42,519	35,572	19,146	15,013	3866	2261	131

Relative progress can alone be measured by relation to area in countries where raw natural products form the principal objects of industry. This particularly applies to wool and other pastoral products when value of exports are considered, as comparatively little of the produce is consumed locally. Moreover, great preponderance of wool in the value of domestic products is an indication rather of a vast sparsely populated territory than of a high stage of development, and therefore to measure such products by population, which in such cases must be relatively small, would be utterly misleading, as it would artificially place the Colony at a disadvantage which supported the greatest number of persons per square mile. It scarcely requires an argument to demonstrate that the Colony which supports in comfort the greatest number of persons per square mile is in itself the best proof that that Colony has in the best sense attained the highest stage of development in a material point of view.

If these considerations be admitted, it follows that the Colonies in Australasia which at present have attained the highest stage of development stand in the following order, beginning with the highest :—

1. Victoria.
2. New Zealand.
3. Tasmania.
4. New South Wales.
5. Queensland.
6. South Australia.
7. Western Australia.

The diagram accompanying this report more clearly depicts the facts supporting these conclusions.

Rate of Progress.

The rapidity with which the population of young English colonies increases—for example, doubling in the space of 19·76 to 22·99 years—is marvellous when contrasted with the most vigorous of old densely populated centres. During the period 1875-1888 the United Kingdom only increased from 32,838,758 to 37,453,574, *i.e.*, an increase of 4,614,816 in 13 years, or 1·02 per cent. per year. This rate, if continuous, would take 68·52 years to double the existing population, that is if other obstacles to growth did not arise.

The relatively more rapid progress of young countries is mainly due to the (1) large proportional influx of immigrants (relative to population) from older centres, and (2) to the favourable hygienic conditions of a thinly populated country, tending to prolong the average life, and to produce a much lower death-rate than is found common in unfavourably crowded centres of population.

The proportion of yearly increase due to these separate causes in the Australasian Colonies is contrasted with the average yearly increase in the United Kingdom ; thus :—

AVERAGE of last 20 years.

	Australasian Colonies.	United Kingdom.
Per cent. of increase per year due to natural causes, *i.e.*, excess of births over deaths...	1·92	...
Percentage increase per year due to immigration	1·65	...
Total percentage increase from both causes	3·57	1·02
Time in which the respective rates, if years continuous, would double the population ..	19·76	68·52

Thus it appears that in Australasia the proportion of the yearly increase due to immigration alone is relatively larger than the yearly increase in the United Kingdom from all causes.

Fallacies of Estimates based on current high Rate of Increase.

It is a common fallacy, however, to assume that the present relative rate of increase in Australasia will be maintained over a very long period of years; for as population grows larger the immigration element will diminish proportionally, unless we assume, what is very improbable, that immigration will continue to increase at the same rate as the total population.

The death-rate, too, now so favourable, will gradually increase to the normal rate of European countries as the people approach a similar density of population; for it is now too well established that a more or less high death-rate is always a concomitant of densely populated centres.

Progress of United States, 1790 *to* 1890.

These conclusions are borne out by statistics relating to the growth of population in the United States of America during the last 100 years. In 1790 the population of that country was 3,929,214, and it is probable that it will contain 62,000,000 persons at the close of 1890, representing a mean yearly rate of increase of 2·8 per cent., due to natural increase and to immigration. The following table shows the diminishing curve of rate of increase towards the close of this period :—

PROGRESS of United States, 1790 to 1890.

Year.	Population.	Mean Rate of Increase per year.
		Per cent.
1790	3,929,214	...
1800	5,308,483	3·05
1810	7,239,881	3·12
1820	9,633,822	2·90
1830	12,866,020	2·95
1840	17,069,453	2·85
1850	23,191,876	3·11
1860	31,443,321	3·10
1870	38,558,371	2·07
1880	50,155,783	2·73
1890	62,000,000	2·07
Mean rate per year for	the whole period	2·80

It is more probable, therefore, that the progress of population in Australasia during the next hundred years will follow the curve exhibited in the United States progress between the years 1790 and 1890, rather than that the rate of the past 20 years shall continue to be maintained for such a long period. If the latter were possible, it would produce a population of 135,980,000 persons in the year 1990; but if the former and more probable curve of progress be maintained, the population in the same year would only reach 58,031,000, *i.e.*, a population nearly equal to that of the United States at the present time.

Special Causes affecting the future Progress of Australasia.

Perhaps, however, the higher stages of development in the United States in the coming century may specially favour the progress of the Australasian group.

An estimate, now prepared, based upon the experience of thirteen great countries—embracing a population of 314 millions, possessing an area of 6259 million acres—demonstrates that the present civilization requires the cultivation of 2·81 acres per head for food and raw products. International exchange disguises this fact as regards the experience of any one country. The present area of the United States is reckoned at about 2291 million acres. Allowing a need of the estimated requirement of cultivated land—viz. 2·81 acres per head—for supplying the whole round of wants of each person, and that three-fourths of her total area are capable of cultivation; then if her population increases only at the rate of 2 per cent. per year, the population would be so vast that the produce of every available acre 120 years hence would be wholly required for *home consumption*.

The checks to population, however, may be expected to increase, and this limit may be placed further back; but it is clear that the need to withdraw more and more her present enormous export of raw products from external markets will greatly operate in enhancing the value of the virgin soils of Australasia, and so give an additional spur to her development.

Summary of General Statistics for each Colony of Australasia, Period 1878 and 1885-89.

Tasmania .....
Victoria .....
New South Wales .....
Queensland .....
South Australia .....
Western Australia .....
New Zealand .....
Aggregate of Seven Colonies...
} Years 1878 and 1885-1889.

Comparative Table showing the general Statistics for each Colony for the year 1889.

Tasmania.

Statistical Summary for the Year 1878 *and Years* 1885–1889.

Area—26,215 square miles.

	1878.	1885.	1886.	1887.	1888.	1889.
Population	109,947	133,791	137,211	142,478	146,149	151,480
Revenue—						
From Customs £	211,029	276,100	276,265	274,065	297,912	307,352
Other Taxes £	28,695	90,018	95,279	101,436	107,895	115,291
Total Revenue £	385,936	571,397	568,924	594,976	640,068	678,909
General Expenditure—						
Interest on Loans £	93,833	148,598	155,844	182,571	184,613	209,737
Total Expenditure £	379,232	585,767	584,756	668,759	709,486	681,674
Loans Expenditure—						
On Railways £	...	256,372	266,014	197,696	181,102	173,548
Other Public Works £	...	208,346	218,275	181,890	231,334	193,491
Total, current year £	...	465,448	484,289	379,586	412,436	367,039
Public Debt on 31st December £	1,738,500	3,357,000	4,026,720	4,109,370	4,499,470	5,019,050
Imports £	1,324,812	1,757,486	1,756,567	1,596,817	1,610,664	1,611,035
Exports—						
Wool £	479,165	260,480	310,934	415,425	306,930	283,237
Gold £	59,124	141,319	104,402	140,584	127,562	123,486
Tin £	316,311	357,587	363,364	407,857	426,326	345,407
Total Home Products £	1,288,011	1,299,011	1,312,416	1,425,457	1,303,908	1,442,605
Total Exports £	1,315,695	1,313,693	1,331,540	1,449,371	1,333,865	1,459,857
Shipping—Total Tonnage	315,854	677,806	692,429	735,299	776,278	912,246
Railways—						
Miles open	45	257	303	318	328	375
Train Miles	101,712	532,193	587,917	694,567	777,035	815,986
Cost of Construction £	435,445	2,009,712	2,213,781	2,318,482	2,506,794	2,925,362
Receipts £	22,190	126,905	131,935	140,224	153,471	174,518
Expenditure £	17,681	111,167	114,706	126,250	140,178	152,172
Telegraphs—						
Miles Poles	692	1635	1772	1816	1894	1980
Offices	59	135	144	156	165	178
Cost of Construction £	...	158,643	154,982	155,711	157,130	171,887
Messages	90,313	212,389	209,307	233,811	271,769	280,559
Receipts £	4277	19,985	19,793	20,715	22,621	26,414
Expenditure £	5970	19,317	20,337	20,757	21,202	21,809
Post Office—						
Offices	191	246	251	258	278	293
Letters and Post Cards	2,313,801	3,872,506	4,193,873	4,549,899	4,716,244	4,814,239
Newspapers and Packets	2,045,533	3,986,364	4,300,501	4,464,242	4,819,315	6,076,363
Receipts £	17,000	26,170	32,510	33,567	35,914	39,536
Working Expenses £	26,221	37,503	38,401	42,360	41,770	44,283
Banks—Deposits (Ordinary) £	1,873,004	3,640,428	4,127,946	3,832,137	3,564,717	3,958,848
(Savings) £	308,389	436,414	429,090	448,280	469,928	497,492
Property—Assessed Ann. Value £	665,689	850,781	848,273	869,074	891,943	1,102,397
Agriculture—						
Wheat—Acres	48,392	30,266	35,322	40,498	40,657	49,055
Bushels	778,977	524,353	632,573	675,069	819,497	756,639
Oats—Acres	28,802	29,247	21,607	21,169	33,834	40,169
Bushels	714,987	704,325	560,622	385,195	946,354	1,148,935
Barley—Acres	4040	6833	2749	3766	4670	4446
Bushels	97,845	176,466	61,585	52,240	109,979	105,574
Potatoes—Acres	8079	11,073	16,084	16,394	13,653	17,015
Tons	27,257	53,521	75,773	42,526	66,721	72,275
Hay—Acres	33,933	41,693	47,269	44,562	52,521	50,913
Tons	40,499	51,872	50,158	50,901	58,290	73,859
Land in Crop—Acres	143,797	144,761	152,388	150,140	172,189	189,959
Land under Cultivation—Acres	355,403	417,777	446,391	457,436	481,533	488,354
Live Stock—						
Horses	24,107	28,610	29,684	29,528	29,238	29,778
Cattle	126,276	138,642	148,665	147,092	142,019	150,004
Sheep	1,852,987	1,648,627	1,608,946	1,547,242	1,430,065	1,551,429
Pigs	39,595	67,395	73,118	52,408	43,227	58,632

Tasmania.

Statistical Summary for Year 1878 *and Years* 1885–1889.

(Relative and Proportional.)

	1878.	1885.	1886.	1887.	1888.	1889.
Population—						
Persons per square mile	4·95	5·10	5·23	5·43	5·57	5·78
Birth Rate	32·27	35·08	34·15	33·86	33·10	31·97
Death Rate	15·67	15·40	14·58	15·45	14·11	14·10
Marriage Rate	7·98	7·96	7·26	6·71	6·58	6·50
Finance—						
Revenue per head £	3 11 1	4 6 6	4 4 0	4 5 1	4 8 8	4 11 2
Taxation ditto £	2 4 7	2 15 5	2 14 10	2 13 9	2 16 2	2 16 10
Ditto per cent. to Revenue	62·63	64·07	65·31	63·11	63·40	62·25
General Expenditure per head £	3 9 10	4 8 8	4 6 4	4 15 8	4 18 4	4 11 7
Public Debt per head £	15 17 0	25 1 10	29 6 11	28 16 10	30 15 9	33 2 8
Interchange—						
Imports per head £	12 4 2	13 5 11	12 19 3	11 8 4	11 3 3	10 16 6
Exports (Home Products) per head £	11 9 11	9 16 7	9 13 9	10 3 10	9 0 8	9 13 11
Total Exports per head £	12 2 6	9 18 9	9 16 6	10 7 3	9 4 10	9 16 2
Home Products per sq. mile £	49·13	49·55	50·06	54·37	49·74	55·03
Railways—						
Miles open & being constructed, per 100,000 persons	40·93	334·43	325·46	315·35	305·93	317·51
Ditto, per 10,000 sq. miles	17·16	168·00	168·22	168·22	168·41	180·24
Population, per mile open and constructed	2443	302	307	323	331	321
Cost of construction per mile open £	9454	7820	7306·21	7290·82	7654·33	7811·38
Receipts per mile worked £	493·11	528·77	478·00	439·56	475·14	504·39
Ditto per train mile *s. d.*	4 4·3	4 9·23	4 5·86	4 0·46	3 11·40	4 3·33
Profit per cent. to cost of construction	1·01	0·78	0·77	0·60	0·50	0·76
Working Expenses per mile worked £	392·91	463·19	415·60	395·77	433·99	439·80
Ditto per train mile *s. d.*	3 5·7	4 2·13	3 10·82	3 7·62	3 7·28	3 8·75
Ditto per cent. to Receipts	79·68	87·60	86·94	90·09	91·07	87·19
Service Train Miles per mile worked	2260·27	2070·79	2130·00	2177·32	2405·99	2358·34
Ditto per head	·93	4·02	4·33	4·97	5·38	5·48
Ditto per 100 square miles	38·79	2030·11	2242·67	2649·50	2964·08	3112·67
Post Office—						
Letters, Newspapers, &c. per head mean population	40·17	59·46	62·69	64·46	66·08	73·18
Offices per 100 square miles	·73	·94	·96	·99	1·06	1·12
Telegraphs—						
Miles poles per 100 square miles	2·64	6·23	6·76	6·93	7·23	7·55
Offices, ditto	·22	·51	·55	·56	·63	·68
Agriculture—						
Acres under cultivation per head	3·27	3·16	3·29	3·27	3·33	3·28
Wheat, bushels per acre	16·09	17·32	17·91	16·42	20·15	15·43
Oats, ditto	24·82	26·82	25·94	18·19	27·97	23·75
Barley, ditto	24·21	25·83	22·40	13·87	23·55	28·60
Potatoes, tons per acre	3·37	4·83	4·71	2·59	4·88	4·25
Hay, ditto	1·19	1·24	1·06	1·14	1·11	1·45
Wheat, bushels per head	7·18	3·97	4·67	4·83	5·68	5·08
Oats, ditto	6·59	5·93	4·13	2·75	6·56	7·72
Barley, ditto	·90	1·34	·45	·37	·76	·71
Live Stock—						
Horses per square mile	·91	1·09	1·13	1·13	1·12	1·14
Cattle ditto	4·81	5·29	5·71	5·61	5·41	5·72
Sheep ditto	70·68	62·89	61·37	59·02	54·55	59·18

Victoria.

Statistical Summary for the Year 1878 *and Years* 1885–1889.

Area—87,884 square miles.

	1878.	1885.	1886.	1887.	1888.	1889.
Population	827,439	971,145	1,003,043	1,036,119	1,090,869	1,118,028
Revenue—						
From Customs £	1,487,448	1,919,539	2,004,460	2,132,361	2,353,050	2,879,830
Other Taxes £	310,753	628,632	630,100	607,274	717,953	869,840
Total Revenue £	4,504,413	6,290,361	6,481,021	6,733,826	7,609,598	8,675,990
General Expenditure—						
Interest on Loans £	920,911	1,271,907	1,282,010	1,270,809	1,385,121	1,459,242
Total Expenditure £	4,634,349	6,140,356	6,513,540	6,561,251	7,287,151	7,919,902
Loans Expenditure—						
On Railways £	389,963	848,358	1,401,511	1,521,817	1,742,149	3,083,211
Other Public Works, &c. £	470,626	304,707	330,323	566,143	647,795	654,087
Total Current Year £	860,589	1,153,065	1,731,834	2,087,960	2,389,944	3,737,298
Public Debt on 31st Dec. £	17,022,065	28,628,588	30,114,203	33,127,382	34,627,382	37,367,027
Imports £	16,161,880	18,044,604	18,550,575	19,022,151	23,972,134	24,402,760
Exports—						
Wool £	5,810,148	5,028,011	4,999,662	5,073,491	5,170,930	5,928,847
Gold £	†1,003,586	†405,378	†635,427	†1,254,546	†6,040,756	†2,280,326
Tin £	4298	6774	2554	3584	4928	368
Total Home Products £	10,676,499	12,452,245	9,054,687	8,592,970	10,156,633	9,776,670
Total Exports £	14,925,707	15,551,758	11,795,321	11,351,145	13,853,763	12,734,734
Shipping—Total Tonnage	1,913,427	3,260,158	3,735,387	3,858,243	4,307,883	4,599,178
Railways—						
Miles Open	1052	1676	1743	1880	2018	‡2199
Train Miles	3,633,190	6,849,818	7,256,703	7,991,378	9,082,312	10,680,743
Cost Construction £	14,550,466	22,236,000	23,903,895	25,297,534	27,268,258	29,048,670
Receipts £	1,391,701	2,181,932	2,329,126	2,453,078	2,756,049	3,110,140
Expenditure £	729,041	1,277,425	1,310,538	1,427,116	1,753,019	1,945,837
Telegraphs—						
Miles, poles	2970	3949	4094	4115	4194	3967
Offices	233	411	420	515	601	656
Cost of Construction £	*	*	*	*	*	*
Messages	1,003,654	1,624,666	2,023,858	2,260,480	2,743,938	2,885,919
Receipts £	60,288	90,631	95,499	102,755	125,342	159,093
Post Office—						
Offices	1007	1384	1429	1492	1544	1600
Letters and Post Cards	22,324,931	36,061,880	38,392,414	41,287,972	47,700,776	48,097,268
Newspapers and Packets	13,907,627	22,766,726	24,309,015	26,539,670	30,792,238	27,473,020
Receipts £	184,532	288,009	295,339	295,904	*	370,000
Working Expenses £	313,946	488,067	514,400	553,172	562,863	582,910
Bank Deposits—Ordinary £	16,106,581	30,593,564	31,239,472	35,215,547	37,570,838	38,768,936
Savings £	1,510,273	3,337,018	3,589,916	3,696,699	4,669,541	4,971,933
Property—Assessed Annual Value £	7,030,996	8,793,490	9,621,135	10,153,771	11,913,473	12,931,526
Agriculture—						
Wheat—Acres	691,622	1,020,082	1,052,685	1,232,943	1,217,191	1,178,735
Bushels	6,060,737	9,170,538	12,100,036	13,328,765	8,647,709	11,495,720
Oats—Acres	134,428	215,994	185,765	199,036	197,518	236,496
Bushels	2,366,026	4,692,803	4,256,079	4,562,530	2,803,800	5,644,867
Barley—Acres	22,871	74,112	37,031	40,985	83,483	90,724
Bushels	417,157	1,302,854	827,852	956,476	1,131,427	1,831,132
Potatoes—Acres	36,527	42,602	49,974	48,263	43,074	47,139
Tons	98,958	163,202	170,661	198,225	131,149	157,104
Hay—Acres	172,799	421,036	445,150	441,812	411,332	451,546
Tons	209,028	442,118	483,049	624,122	308,117	666,385
Land under Tillage–Acres	1,609,278	2,405,157	2,417,582	2,576,405	2,564,742	2,627,262
Live Stock—						
Horses	210,105	304,098	308,553	315,000	323,115	329,335
Cattle	1,184,843	1,290,790	1,303,265	1,333,873	1,370,660	1,394,209
Sheep	9,379,276	10,681,837	10,700,403	10,623,985	10,818,575	10,882,231
Pigs	177,373	239,837	240,957	243,461	245,818	249,673

* Information not available. † Including specie. ‡ For year ending 30th June, 1889.

Victoria.

Statistical Summary for Year 1878 *and Years* 1885–9.

(Relative and Proportional.)

	1878.	1885.	1886.	1887.	1888.	1889.
Population—						
Persons per square mile	9·42	11·29	11·41	11·79	12·41	12·72
Birth Rate	30·59	30·74	31·22	32·40	32·49	32·92
Death Rate	14·62	14·73	15·14	15·70	15·34	17·56
Marriage Rate	5·86	7·58	7·83	7·62	8·42	8·33
Finance—						
Revenue per head £	5 3 8	6 9 0	6 11 4	6 12 1	7 3 3	7 17 2
Taxation ditto £	2 1 5	2 12 3	2 13 5	2 13 9	2 17 10	3 7 10
Per cent. to Revenue	39·92	40·51	40·65	40·68	40·37	43·22
General Expenditure per head £	5 0 8	6 5 11	6 12 0	6 8 8	6 17 3	7 3 5
Public Debt per head £	20 11 5	28 17 3	30 0 5	31 19 5	31 14 10	33 8 5
Interchange—						
Imports per head £	18 11 1	18 10 2	18 15 5	18 13 1	22 11 5	22 1 11
Exports, Home Products, per head £	12 5 8	12 15 5	9 3 6	8 6 9	9 15 1	8 17 0
Total Exports per head £	17 3 6	15 19 0	11 19 0	11 2 7	13 0 11	11 10 8
Home Products per sq. mile £	121·49	141·69	103·03	96·76	157·63	111·25
Railways—						
Miles open & being constructed per 100,000 persons	121·05	191·37	209·60	282·44	254·22	262·52[a]
Ditto per 10,000 square miles	119	212	235	328	307	329[a]
Population per mile open and being constructed	826	531	477	360	393	386[a]
Cost of construction per mile open £	13,831	13,235	13,636	12,980	13,512	13,210
Receipts, ditto £	1323	1299	1329	1259	1366	1414[b]
Ditto per train mile *s. d.*	7 7·93	6 4·45	6 5·03	6 1·67	6 0·80	5 9·89[b]
Profit per cent. to cost of construction	4·55	4·07	4·26	4·06	3·68	4·01
Working Expenses per mile open £	693·00	760·37	747·60	732·23	868·69	885·07[b]
Ditto, per train mile *s. d.*	4 1·06	3 8·76	3 7·34	3 6·86	3 10·32	3 7·72[b]
Ditto, per cent. Receipts	52·38	58·55	56·26	58·18	63·61	62·56
Service Train Miles, per mile open	3453·60	4077·27	4139·58	4100·25	4500·65	4858·20
Ditto, per head	4·18	7·03	7·35	7·84	8·55	9·67
Ditto, per 100 square miles	4134·07	7794·16	8257·14	9093·10	10,334·43	12,153·23
Post Office—						
Letters, Newspapers, &c., per head mean population	41·60	60·33	51·41	66·52	73·91	67·53
Offices per 100 square miles	1·15	1·57	1·62	1·69	1·75	1·82
Telegraphs—						
Miles Poles per 100 square miles	3·38	4·49	4·65	4·68	4·77	4·54
Offices, ditto	·27	·46	·47	·58	·68	·75
Agriculture—						
Acres under cultivation per head	1·85	2·47	2·45	2·53	2·42	2·38
Wheat, bushels per acre	8·76	8·99	11·49	10·81	7·10	9·75
Oats, ditto	17·60	21·72	22·91	22·93	14·20	23·87
Barley, ditto	18·24	17·58	22·36	23·34	13·55	20·18
Potatoes, tons, per acre	2·70	3·83	3·41	4·11	3·04	3·33
Hay, ditto	1·19	1·05	1·08	1·41	0·75	1·48
Wheat, bushels, per head	6·97	9·41	12·26	13·07	8·14	10·41
Oats, ditto	2·72	4·81	4·31	4·47	2·64	5·11
Barley, ditto	·48	1·34	·84	·94	1·07	1·66
Live Stock—						
Horses per square mile	2·39	3·46	3·51	3·58	3·68	3·75
Cattle ditto	13·48	14·69	14·82	15·18	15·59	15·86
Sheep ditto	106·61	121·54	121·76	120·89	123·10	123·82

[a] Based on Railways, 31 December. [b] Based on Railways, financial year.

New South Wales.

Statistical Summary for the Year 1878 *and Years* 1885-9.

Area—310,700 Square Miles.

		1878.	1885.	1886.	1887.	1888.	1889.
Population	No.	671,888	957,914	1,001,966	1,042,919	1,085,740	1,122,200
Revenue—							
From Customs	£	1,157,792	1,876,452	2,068,571	2,011,947	1,883,058	1,905,883
Other Taxes	£	151,926	376,199	543,264	652,601	798,825	771,286
Total Revenue	£	4,991,919	7,587,368	7,594,300	8,582,811	8,886,360	9,063,397
General Expenditure—							
Interest on Loan	£	587,552	1,300,184	1,579,689	1,693,926	1,745,695	1,805,770
Total Expenditure	£	5,078,381	8,566,488	9,078,869	9,098,460	9,072,835	9,250,271
Loans Expenditure—							
On Railways	£	721,840	2,982,746	2,754,683	1,448,135	1,000,829	601,939
Other Public Works	£	94,477	913,399	1,011,673	688,336	477,583	1,764,060
Total Expenditure	£	816,317	3,896,145	3,766,356	2,136,471	2,478,406	2,365,999
Public Debt, 31st December	£	11,688,119	35,564,259	41,034,249	40,995,350	44,100,149	46,646,449
Imports	£	14,768,873	23,365,196	20,973,548	18,806,236	20,885,557	22,863,057
Exports—							
Wool	£	5,723,316	7,246,642	7,201,976	9,200,071	9,358,515	10,785,070
Gold	£	*1,699,953	*1,451,124	*1,613,674	*1,312,492	*2,122,764	*3,202,614
Tin	£	432,573	722,198	720,059	824,105	807,688	447,396
Total Home Products	£	10,716,511	9,860,250	12,884,200	15,472,361	17,289,487	17,423,311
Total Exports	£	12,965,879	16,541,745	15,562,213	18,496,917	20,859,715	23,294,934
Shipping—Total Tonnage	No.	2,459,504	4,133,077	4,258,604	4,322,758	4,771,419	5,321,179
Railways—							
Miles open	No.	688	1777	1935	2081	2206	2252
Train miles	No.	2,655,200	6,638,399	6,479,265	6,472,473	7,334,200	7,789,242
Cost Construction	£	9,784,645	24,962,972	27,355,307	26,554,357	26,630,664	30,196,504
Receipts	£	902,989	2,174,368	2,160,070	2,208,295	2,509,527	2,538,477
Expenditure	£	536,988	1,458,153	1,492,993	1,457,761	1,578,590	1,634,602
Telegraphs—							
Miles (poles)	No.	7078	10,351	10,816	10,721	10,690	10,732
Offices	No.	236	404	425	434	460	485
Cost of Construction	£	413,258	641,669	668,028	684,600	704,912	713,663
Messages	No.	1,132,287	2,625,992	2,661,126	2,876,504	3,410,407	3,433,562
Receipts	£	76,227	191,192	184,053	187,858	185,965	213,776
Post Office—							
Offices	No.	847	1115	1157	1167	1203	1261
Letters and Post Cards	No.	18,159,900	39,351,200	42,849,900	44,845,900	48,986,000	53,971,300
Newspapers and Packets	No.	10,006,000	29,014,200	34,381,200	39,712,300	..	44,400,200
Receipts	£	155,622	316,172	330,591	342,094	368,956	395,584
Working Expenses	£	248,217	375,965	396,710	426,587	415,392	393,606
Banks Deposits—Ordinary	£	16,722,452	27,207,684	27,330,239	29,032,530	30,819,549	32,755,605
Savings	£	1,835,232	3,488,550	3,504,803	3,675,893	4,037,675	4,280,083
Property—Assessed Ann. Value	£	..	..	..	..	..	7,009,575
Agriculture—							
Wheat—Acres		233,253	264,867	337,730	389,390	304,803	419,758
Bushels		3,439,326	2,733,133	5,868,844	4,695,849	1,450,503	6,570,335
Oats—Acres		22,129	14,117	23,947	19,393	7984	22,358
Bushels		447,912	279,107	600,892	394,762	109,931	543,330
Barley—Acres		6152	5298	6079	4402	3318	5440
Bushels		132,072	85,606	132,949	84,533	36,760	113,109
Potatoes—Acres		16,725	15,166	17,322	20,915	15,419	17,551
Tons		53,590	38,695	45,803	61,455	36,839	50,096
Hay—Acres		104,096	219,886	223,470	170,324	209,531	212,106
Tons		172,407	191,372	349,888	230,597	134,911	366,229
Land in Crops—Acres		613,642	868,093	977,664	1,048,305	999,298	1,164,475
Live Stock—							
Horses		336,468	344,697	361,663	390,609	411,368	430,777
Cattle		2,771,583	1,317,315	1,367,844	1,575,487	1,622,907	1,741,592
Sheep		25,479,484	37,820,906	39,169,304	46,965,152	46,503,469	50,106,768
Pigs		220,320	208,697	209,576	264,111	248,583	238,535

* Including Specie.

New South Wales.

Statistical Summary for Year 1878 *and Years* 1885-9.

(Relative and Proportional.)

	1878.	1885.	1886.	1887.	1888.	1889.
Population—						
Persons per square mile	2·16	3·08	3·22	3·36	3·49	3·61
Birth Rate	38·50	37·64	37·03	36·41	36·20	33·73
Death Rate	16·36	16·42	14·89	13·15	13·54	13·43
Marriage Rate	8·08	8·18	7·97	7·42	7·37	6·79
Finance—						
Revenue per head £	7 8 7	8 3 0	7 15 0	8 8 0	8 6 11	8 4 2
Taxation ditto £	1 16 0	2 8 5	2 13 4	2 12 1	2 10 5	2 8 6
Taxation per cent. to Revenue	24·23	29·69	34·39	31·02	30·18	29·54
General Expenditure per head £	7 11 2	8 1 11	9 5 4	8 18 0	8 10 9	8 7 7
Public Debt per head £	17 17 11	32 5 2	40 19 0	39 6 2	40 12 4	41 11 4
Interchange—						
Imports per head £	21 19 7	25 1 11	21 8 0	18 7 10	19 12 5	20 14 2
Exports (Home Products) per head £	15 18 11	10 11 10	13 3 0	15 2 8	16 4 11	15 5 8
Total Exports per head £	19 13 1	17 15 5	15 17 6	18 1 10	19 12 0	21 2 0
Home Products per square mile	34·49	31·74	41·47	49·80	55·65	56·08
Railways—						
Miles open and being constructed per 100,000 persons	102·39	234·66	220·12	216·44	212·43	222·10
Ditto per 10,000 sq. miles	22	70	69	71	73	72
Population per mile open and being constructed	960	438	454	462	471	498
Cost of construction per mile open £	14,338	14,044	14,474	12,760	12,072	13,409
Receipts ditto £	1321	1223	1143	1061	1138	1170
Receipts per train mile *s. d.*	6 9·62	6 6·61	6 8·01	6 9·88	6 10·12	6 7·72
Profit per cent. to cost of construction	3·74	2·87	2·44	2·83	3·49	3·03
Working expenses per mile open £	780·50	820·34	789·94	700·51	715·59	753·43
Ditto, per train mile *s. d.*	4 0·53	4 4·72	4 7·32	4 6·05	4 3·66	4 3·33
Ditto, per cent. Receipts	59·35	67·06	69·11	66·01	62·90	64·39
Service Train Miles, per mile open	3859·30	3734·68	3428·18	3110·27	3324·66	3458·81
Ditto, per head	3·95	7·13	6·61	6·33	6·89	7·06
Ditto, per 100 square miles	854·57	2136·59	2085·37	2083·19	2360·54	2507·00
Post Office—						
Letters, Newspapers, &c., per head mean population	41·92	73·44	78·81	82·70	52·23	89·11
Offices per 100 square miles	·27	·36	·37	·37	·38	·41
Telegraph Wires—						
Poles per 100 square miles	2·27	3·33	3·48	3·48	3·44	3·45
Offices ditto	·07	·13	·13	·13	·14	·16
Agriculture—						
Acres under cultivation per head	·91	·93	·99	1·02	·94	1·05
Wheat, bushels per acre	14·74	10·32	17·37	12·06	4·76	15·65
Oats, ditto	20·24	19·77	25·09	20·35	13·77	24·30
Barley, ditto	21·46	16·16	21·87	19·20	11·08	20·79
Potatoes, tons per acre	3·20	2·55	2·64	2·94	2·36	2·85
Hay, ditto	1·94	·87	1·56	1·35	·64	1·73
Wheat, bushels per head	5·11	2·94	5·98	4·59	1·36	5·95
Oats, ditto	·66	·30	·61	·38	·10	·49
Barley, ditto	·19	·09	·13	·08	·03	·10
Live Stock—						
Horses per square mile	1·08	1·10	1·16	1·25	1·32	1·39
Cattle ditto	8·92	4·24	4·40	5·07	5·22	5·61
Sheep ditto	82·00	121·73	126·06	151·16	149·67	161·28

Queensland.

Statistical Summary for the Year 1878 *and Years* 1885-9.

Area—668,497 Square Miles.

	1878.	1885.	1886.	1887.	1888.	1889.
Population	210,510	326,916	342,614	366,940	387,463	406,658
Revenue—						
From Customs £	571,731	990,057	965,754	1,084,709	1,344,504	1,344,472
Other Taxes £	73,526	160,018	230,897	253.129	233,167	171,752
Total Revenue £	1,559,111	2,840,960	2,810,147	3,032,463	3,463,097	3,440,249
General Expenditure—						
Interest on Loans £	380,836	756,565	841,565	942,815	1,015,667	1,059,769
Total Expenditure £	1,543,820	2,875,609	3,202,030	3,350,049	3,368,405	3,594,625
Loans Expenditure—						
On Railways £	267,564	1,208,152	1,379,322	1,294,142	1,043,909	1,170,598
Other Public Works £	433,699	503,571	649,903	601,465	530,349	556,437
Total Expenditure £	701,263	1,711,723	2,029,225	1,895,607	1,574,258	1,727,035
Public Debt, 31st December £	8,935,350	19,320,850	20,820,850	23,320,850	25,840,950	25,840,950
Imports £	3,436,077	6,422,490	6,103,227	5,821,611	6,646,738	6,052,562
Exports—						
Wool £	1,185,659	1,779,682	1,413,908	2,368,711	2,258,365	2,680,134
Gold £	*1,100,129	*1,138,871	*1,251,162	*1,454,678	*1,669,911	*2,857,030
Tin £	88,666	156,777	192,564	223,274	230,360	157,867
Total Home Products £	..	5,116,293	4,813,092	6,338,205	6,012,722	7,511,744
Total Exports £	3,190,419	5,243,404	4,933,970	6,453,945	6,126,362	7,736,309
Shipping—Total Tonnage	1,066,758	1,029,181	1,120,479	924,232	996,229	1,001,009
Railways—						
Miles open	428	1434	1555	1765	1931	2064
Train Miles	829,072	2,619,986	2,663,204	2,785,761	3,223,127	3,626,921
Cost of construction £	4,153,935	9,484,654	10,716,352	12,189,919	13,064,598	13,332,046
Receipts £	248,065	691,541	640,845	719,254	776,794	796,344
Working Expenses £	145,970	444,140	476,966	534,381	507,961	594,649
Telegraphs—						
Miles, poles	5410	7533	8225	8772	9167	9456
Offices	148	259	282	293	311	343
Cost of Construction £	..	..	672,061	745,207	758,371	786,610
Messages	538,567	1,202,080	1,201,495	1,288,183	1,436,931	1,327,937
Receipts £	47,116	82,037	82,958	83,063	103,790	93,297
Working Expenses £	61,568	92,933	100,628	109,066	113,067	117,570
Post Office—						
Offices	428	623	662	716	766	834
Letters and Post Cards	4,500,363	9,776,407	10,503,345	11,586,807	12,897,102	13,070,083
Newspapers and Packets	4,334,496	9,496,650	10,711,293	11,261,839	12,195,366	12,851,834
Receipts £	49,593	97,651	102,273	116,531	128,798	133,469
Working Expenses £	111,058	203,534	208,410	214,411	197,437	209,404
Bank Deposits—Ordinary £	3,810,033	7,188,958	7,170,781	8,708,299	11,201,189	10,182,388
Savings £	702,739	1,340,255	1,337,965	1,426,018	1,611,876	1,597,784
Property—Assessed Ann. Value £	518,356	1,709,979	1,819,738	1,812,562	1,848,295	4,240,189
Agriculture—						
Wheat—Acres	9618	10,093	6787	8248	9305	8459
Bushels	130,452	51,598	21,221	182,308	8263	134,335
Oats—Acres	132	208	138	550	642	750
Bushels	1274	1006	1438	13,343	3626	14,561
Barley—Acres	1065	406	768	1165	324	1254
Bushels	16,904	9826	18,483	31,493	7432	26,630
Potatoes—Acres	3882	6735	7202	8717	7303	7185
Tons	9063	18,989	26,967	30,679	20,711	25,889
Hay—Acres	13,904	28,881	39,280	25,734	20,978	45,617
Tons	18,553	30,660	75,371	51,806	32,291	88,172
Land in Crop—Acres	111,747	198,334	209,561	188,845	..	..
Total Land in Cultivation—Acres	117,489	209,130	221,843	205,737	214,002	247,098
Live Stock—						
Horses	148,226	260,207	278,694	305,865	324,326	352,364
Cattle	2,469,553	4,162,652	4,071,563	4,473,716	4,654,932	4,872,416
Sheep	5,631,634	8,994,322	9,690,445	12,926,158	13,444,005	14,470,095
Pigs	50,301	55,843	61,861	73,663	68,994	80,730

* Including specie.

Queensland.

Statistical Summary for Year 1878 *and Years* 1885-9.

(Relative and Proportional.)

	1878.	1885.	1886.	1887.	1888.	1889.
Population—						
Persons per square mile	·31	·49	·51	·55	·58	·61
Birth Rate	34·12	36·66	37·84	38·09	37·77	36·27
Death Rate	19·46	19·58	16·76	14·56	14·66	15·44
Marriage Rate	6·16	8·93	8·37	8·21	8·63	7·87
Finance—						
Revenue per head £	7 10 9	8 18 5	8 9 0	8 10 11	9 3 7	8 13 3
Taxation ditto £	3 2 5	3 12 3	3 12 0	3 15 5	4 3 8	3 16 4
Taxation per cent. to Revenue	41·32	40·48	42·58	44·12	45·56	44·67
General Expenditure per head £	7 9 3	9 0 7	9 12 7	9 8 10	8 18 7	9 1 1
Public Debt ditto £	42 8 11	59 2 0	60 15 5	63 11 11	66 13 9	63 10 11
Interchange—						
Imports per head £	16 12 3	20 3 5	18 7 1	16 8 2	17 12 5	15 4 10
Exports (Home Products) per head £	..	16 1 4	14 9 6	17 17 4	15 18 10	18 18 4
Total Exports per head £	15 8 7	16 9 4	14 16 9	18 3 10	16 4 10	19 9 8
Home Products per square mile	..	7·65	7·20	9·48	8·99	11·24
Railways—						
Miles open & being constructed per 100,000 persons No.	207	625	659	681	692	664
Ditto per 10,000 sq.miles No.	6	30	33	36	39	39
Population per mile open and being constructed No.	261	164	151	147	148	154
Cost of construction per mile open £	9705	6614	6892	6906	6765	6459
Receipts per mile open £	579	482	412	408	402	386
Receipts per train mile *s. d.*	5 10·60	5 3·35	4 9·75	5 1·97	4 9·84	4 4·70
Profits per cent. to cost of construction	2·45	2·68	1·53	1·52	2·06	1·51
Working expenses per mile open £	341	310	307	303	263	288
Ditto per train mile *s. d.*	3 6·24	3 4·68	3 6·98	3 10·04	3 1·82	3 3·35
Ditto per cent. receipts	58·95	64·22	74·42	74·29	65·39	74·67
Service Train Miles per mile open	1937	1827	1713	1578	1669	1757
Ditto per head	3·93	8·23	8·00	7·85	8·54	9·13
Ditto per 100 square miles	124	392	398	447	482	543
Post Office—						
Letters, Newspapers, &c. per head mean population	42·72	61·95	63·80	64·40	66·52	65·28
Offices per 100 square miles	·06	·09	·10	·11	·11	·12
Telegraph—						
Miles Poles per 100 square miles	·87	1·13	1·23	1·31	1·37	1·41
Offices ditto	·02	·03	·04	·04	·05	·05
Agriculture—						
Acres under cultivation per head	·54	·66	·66	·58	·57	·62
Wheat, bushels per acre	13·56	5·11	3·12	22·10	·89	15·88
Oats, ditto	9·65	4·84	10·42	24·26	5·65	19·41
Barley, ditto	15·87	24·20	24·07	27·03	22·94	21·24
Potatoes, tons per acre	2·33	2·82	2·41	3·52	2·83	3·60
Hay, ditto	1·33	1·06	1·91	2·01	1·54	1·93
Wheat, bushels per head	·63	·16	·06	·51	·02	·03
Oats, ditto	·00	·00	·00	·04	·01	·04
Barley, ditto	·08	·03	·05	·09	·02	·07
Live Stock—						
Horses per square mile	·22	·39	·41	·46	·48	·53
Cattle ditto	3·69	6·23	6·09	6·69	6·96	7·29
Sheep ditto	8·42	13·45	14·49	19·33	20·11	21·65

South Australia.

Statistical Summary for the Year 1878 *and Years* 1885-9.

Area—903,690 Square Miles.

	1878.	1885.	1886.	1887.	1888.	1889.
Population	248,795	313,423	312,758	317,446	318,308	324,484
Revenue—						
From Customs £	511,456	569,635	436,114	467,889	533,665	529,433
Other Taxes £	7798	179,812	149,009	180,756	205,688	181,815
Total Revenue £	1,592,634	2,309,592	1,975,269	2,014,102	2,494,556	2,270,433
General Expenditure—						
Interest on Loans £	279,550	664,941	698,364	710,030	717,906	798,991
Total Expenditure £	1,620,310	2,454,808	2,234,395	2,145,135	2,376,399	2,355,927
Loans Expenditure—						
On Railways £	—	709,842	896,643	834,906	702,532	594,967
Other Public Works £	—	426,603	503,328	387,575	286,271	664,019
Total current year £	1,322,325	1,136,445	1,399,971	1,222,481	988,803	1,258,986
Public Debt on 31st December £	5,329,600	17,020,900	18,340,200	19,168,500	19,147,700	20,435,500
Imports £	5,719,611	5,548,403	4,852,750	5,096,293	5,413,638	6,804,451
Exports—						
Wool £	2,417,397	1,671,775	1,955,207	2,036,775	1,610,456	2,194,701
Gold £	—	18,295	32,535	138,302	34,205	73,805
Tin £	—	—	24	16	425	—
Total Home Products £	4,198,035	4,385,599	2,822,138	3,348,561	4,670,773	3,694,692
Total Exports £	5,355,021	5,636,255	4,489,008	5,330,780	6,984,098	7,259,365
Shipping—Total Tonnage	906,273	1,807,042	858,476	1,677,883	1,973,651	1,959,342
Railways—						
Miles open	505	1063	1382	1420	1500	1756
Train Miles	829,293	1,917,263	1,952,546	2,369,608	2,994,563	3,084,200
Cost of Construction £	3,343,074	7,295,102	8,348,800	9,161,783	9,666,223	10,919,696
Receipts £	312,428	643,850	555,589	688,207	948,382	927,812
Expenditure £	213,689	407,248	359,840	402,163	453,385	519,978
Telegraph—						
Miles poles	4217	5346	5459	5486	5509	5511
Offices	135	193	200	206	210	210
Cost of Construction £	—	—	32,198	921,229	1,126,433	848,081
Messages	495,560	713,379	669,442	757,363	994,930	—
Receipts £	51,027	87,496	78,123	88,036	105,422	100,558
Post Offices—						
Offices	429	555	568	585	594	593
Letters and Post Cards	8,849,743	13,158,626	13,129,921	15,181,309	17,012,577	16,388,607
Newspapers and Packets	4,657,254	6,666,013	7,372,544	8,085,495	8,701,032	9,998,836
Receipts £	66,457	108,895	102,662	106,959	109,178	107,560
Working Expenses £	146,796	196,334	179,412	177,593	179,492	177,987
Bank Deposits—Ordinary £	3,378,863	5,881,222	4,962,066	5,251,005	6,156,903	6,822,501
Savings £	993,721	1,571,284	1,653,081	1,581,100	1,627,541	1,923,292
Property—Assessed Ann. Value £	1,450,233	2,273,183	2,269,300	2,109,089	—	2,520,112
Agriculture—						
Wheat—Acres	1,305,851	*	*	1,950,000†	1,605,000†	1,842,961
Bushels	9,332,049	*	*	19,012,500†	6,187,000†	14,577,358
Oats—Acres	2931	*	*	*	*	10,297
Bushels	35,202	*	*	*	*	131,449
Barley—Acres	12,089	*	*	*	*	19,679
Bushels	142,933	*	*	*	*	246,841
Potatoes—Acres	5398	*	*	*	*	6383
Tons	14,378	*	*	*	*	23,853
Hay—Acres	218,359	*	*	*	*	329,643
Tons	210,974	*	*	*	*	395,920
Land under cultivation .. acres	2,011,319	*	*	*	*	2,864,877
Live Stock—						
Horses	121,553	*	*	170,000†	*	170,515
Cattle	251,802	*	*	440,000†	430,000†	324,412
Sheep	6,377,812	*	*	7,254,000†	7,150,000†	6,387,617
Pigs	103,422	*	*	179,000†	170,000†	106,856

* Not taken this year. † Estimated.

South Australia.

Statistical Summary for Year 1878 *and Years* 1885-9.

(Relative and Proportional.)

	1878.	1885.	1886.	1887.	1888.	1889.
Population—						
Persons per square mile	·27	·35	·35	·35	·35	·35
Birth Rate	38·23	37·70	35·98	34·56	33·43	32·25
Death Rate	15·44	12·48	13·63	12·58	11·96	10·94
Marriage Rate	9·47	7·66	6·36	6·32	6·63	6·44
Finance—						
Revenue per head £	6 11 2	7 4 11	6 7 2	6 8 6	7 18 9	7 1 3
Taxation £	2 2 9	2 6 11	1 17 8	2 1 5	2 7 1	2 4 6
Ditto per cent. to Revenue	32·60	32·44	29·62	32·25	29·64	31·33
General Expenditure per head £	6 13 6	7 13 8	7 3 10	6 16 11	7 11 2	7 7 3
Public Debt ditto £	21 8 5	54 6 2	58 12 10	60 7 8	60 3 1	62 19 7
Interchange—						
Imports per head £	23 11 1	17 7 4	15 12 6	16 5 4	17 4 5	21 5 4
Exports Home Products ditto £	17 5 9	13 14 6	9 1 8	10 13 9	14 17 2	11 11 0
Total Exports ditto £	22 1 0	17 12 9	14 9 0	17 0 3	22 4 4	22 13 10
Home Products per sq. mile £	4·63	4·85	3·12	3·71	5·17	4·09
Railways—						
Miles open and being constructed per 100,000 persons	202·98	557·48	579·54	581·76	580·27	566·07
Ditto 10,000 square miles	5·58	19·00	19·92	20·17	20·18	20·04
Population per mile open and being constructed	492	176	172	172	175	179
Cost of Construction per mile open £	6619·95	6861	6041·10	6451·96	6444·15	6218.50
Receipts ditto £	618·66	605·55	477·72	526·56	635·01	528·36
Receipts per train mile *s. d.*	7 6·42	6 8·59	5 8·28	5 9·70	6 4·01	6 0·20
Profit per cent. to cost of construction	2·95	3·24	2·34	3·12	5·12	3·73
Working expenses per mile open £	423·14	383·02	309·41	307·70	303·57	296·12
Ditto per train mile *s. d.*	5 1·84	4 2·97	3 8·23	3 4·73	3 0·33	3 4·46
Ditto per cent. receipts	68·39	63·25	64·77	58·44	47·81	56·04
Service train miles per mile open	1642·16	1803·21	1678·88	1813·01	2005·06	1756·38
Ditto per head	3·33	6·00	6·28	7·56	9·52	9·64
Ditto per 100 square miles	91·76	212·51	216·06	262·21	331·37	341·28
Post Office—						
Letters, Newspapers, &c., per head mean population	55·62	62·04	66·01	74·25	81·80	82·48
Offices per 100 square miles	·04	·06	·06	·06	·07	·07
Telegraphs—						
Miles poles per 100 sq. miles	·46	·59	·60	·61	·61	·61
Offices ditto	·01	·02	·02	·02	·02	·02
Agriculture—						
Acres under cultivation per head	8·09	—	—	—	—	8·95
Wheat, bushels per acre	7·15	—	—	9·75	8·86	7·91
Oats, ditto	12·01	—	—	—	—	12·77
Barley, ditto	11·82	—	—	—	—	12·54
Potatoes, tons ditto	2·67	—	—	—	—	3·74
Hay, ditto	·97	—	—	—	—	1·20
Wheat, bushels per head	37·50	—	—	—	—	46·22
Oats, ditto	·14	—	—	—	—	·42
Barley, ditto	·58	—	—	—	—	·78
Live Stock—						
Horses per square mile	·13	—	—	·18	—	·19
Cattle, ditto	·27	—	—	·48	·47	·36
Sheep, ditto	7·05	—	—	8·03	7·91	7·07

Western Australia.

Statistical Summary for the Year 1878 *and Years* 1885–9.

Area—1,060,000 Square Miles.

	1878.	1885.	1886.	1887.	1888.	1889.
Population	28,166	35,186	39,584	42,488	42,137	43,698
Revenue—						
From Customs £	75,850	134,116	164,048	170,972	159,059	171,990
Other Taxes £	3369	11,719	20,951	17,939	20,885	22,258
Total Revenue £	163,344	323,213	388,564	377,903	357,003	442,725
General Expenditure—						
Interest on Loans £	10,126	49,280	59,780	65,840	63,820	68,170
Total Expenditure £	198,243	308,849	394,675	456,897	385,130	386,000
Loans—						
Expenditure on Railways £	*	118,862	101,297	112,144	6952	4245
Other Public Works £	*	44,131	32,902	92,405	36,900	131,867
Total current year £	*	162,993	134,199	204,549	43,852	135,112
Public Debt on 31st December £	184,556	1,288,100	1,286,000	1,280,700	1,275,200	1,371,981
Imports £	379,050	650,391	758,013	832,213	786,250	818,127
Exports—						
Wool £	150,953	445,208	332,579	333,785	423,762	395,903
Gold £	*	*	*	*	*	58,871
Tin £	*	*	*	*	*	300
Total Home Products £	427,268	445,208	626,524	601,185	673,519	748,899
Total Exports £	428,491	446,692	630,393	604,656	680,344	761,391
Shipping—Total Tonnage	162,753	468,035	497,508	464,637	812,393	1,004,818
Railways—						
Miles open	†68	†124	†154	†171	†204	†204
Train miles	*	201,639	258,369	338,000	359,585	383,000
Cost of construction £	*	436,846	703,610	771,951	892,243	871,377
Receipts £	*	27,179	35,896	40,685	38,382	40,849
Expenditure £	*	28,188	41,388	47,712	44,081	54,339
Telegraphs—						
Miles poles	1581	2254	2385	2548	2961	2961
Offices	*	35	38	38	42	42
Cost of construction £	*	*	*	*	*	199,800
Messages	*	*	165,613	174,116	180,735	197,587
Receipts £	*	*	7428	8439	8353	10,165
Expenditure £	*	*	*	*	*	*
Post Office—						
Offices	*	80	80	79	78	81
Letters and Post Cards	*	1,440,600	1,847,694	2,217,175	2,104,500	2,737,034
Newspapers and Packets	*	1,156,800	1,300,078	1,281,763	2,314,779	1,640,506
Receipts £	*	12,030	13,305	13,413	14,269	13,367
Working Expenses £	*	29,851	31,112	40,298	35,429	33,702
Bank Deposits—Ordinary £	*	*	*	*	*	837,694
Savings £	*	*	*	*	*	31,061
Property—Assessed Ann. Value £	*	*	*	*	*	*
Agriculture—						
Wheat—Acres	23,008	29,511	24,043	29,491	30,740	35,517
Bushels	229,342	339,376	288,516	269,611	322,759	497,238
Oats—Acres	1568	1596	1766	1689	1787	2075
Bushels	28,249	23,142	28,512	25,424	41,852	41,500
Barley—Acres	5927	6178	5185	5935	5009	5475
Bushels	72,498	89,581	82,816	69,710	73,630	93,075
Potatoes—Acres	341	434	356	474	481	462
Tons	850	1085	1071	1130	1974	1386
Hay—Acres	18,750	19,677	25,718	25,807	23,914	25,694
Tons	18,750	19,677	25,718	24,157	23,914	25,694
Land under crop	*	60,058	84,403	66,162	65,699	73,408
Land in cultivation	51,675	76,929	86,248	107,592	106,015	117,833
Live Stock—						
Horses	32,701	34,392	38,360	41,100	41,390	42,806
Cattle	56,158	70,408	88,254	93,444	95,822	119,571
Sheep	869,325	1,702,719	1,809,071	1,909,940	2,112,393	2,366,681
Pigs	16,762	24,280	24,655	23,627	25,083	27,079

* Not to be ascertained. † Does not include private lines.

Western Australia.

Statistical Summary for Year 1878 *and Years* 1885-9.

(Relative and Proportional.)

	1878.	1885.	1886.	1887.	1888.	1889.
Population—						
Persons per square mile	·026	·033	·04	·04	·04	·04
Birth Rate	31·11	35·22	39·43	37·34	36·09	37·02
Death Rate	14·07	17·61	21·67	16·83	16·00	14·19
Marriage Rate	6·50	7·51	7·99	7·58	7·23	6·97
Finance—						
Revenue per head £	5 16 8	9 9 9	10 9 0	9 1 3	8 9 9	10 5 8
Taxation ditto £	2 14 2	4 5 7	4 19 6	4 10 7	4 5 7	4 10 3
Ditto per cent. to Revenue	48·50	45·12	47·61	49·99	50·40	43·88
General Expenditure per head £	7 1 7	9 1 4	10 12 3	10 19 2	9 3 2	8 19 4
Public Debt ditto £	6 11 0	36 12 2	32 9 9	30 2 10	30 5 3	31 7 11
Interchange—						
Imports per head £	13 10 9	19 1 9	20 7 8	19 19 2	18 13 11	19 0 1
Exports Home Products ditto £	15 5 2	13 1 4	16 16 11	14 8 4	16 0 3	17 7 10
Total Exports ditto £	15 6 1	13 2 2	16 19 0	14 10 0	16 3 6	17 13 8
Home Products per sq. mile £	·40	·42	·59	·57	·64	·71
Railways—						
Miles open & being constructed per 100,000 persons	241·42	422·63	537·85	484·42	1062·80*	1888·37*
Ditto per 10,000 sq. miles	·64	1·00	1·88	1·91	4·21	7·67*
Population per mile open and being constructed	414·20	244	186	206	94	54*
Cost of construction per mile open £	*	3523	4569	4514·33	4373·74	4271·46
Receipts per mile worked £	*	219·18	233·09	252·70	204·16	217·28
Ditto per train mile *s. d.*	*	2 8·35	2 9·34	2 4·89	2 1·62	2 1·60
Profit per cent. to cost of construction	*	— ·25	— ·77	— ·91	— ·64	— 1·55
Working Expenses per mile worked £	*	227·32	268·75	296·35	234·47	289·04
Ditto per train mile *s. d.*	*	2 9·55	3 2·44	2 9·88	2 5·42	2 10·05
Ditto per cent. receipts	*	103·71	115·30	117·27	114·85	133·02
Service Train Miles per mile open	*	1642·25	1677·72	2099·38	1912·68	2037·23
Ditto per head	*	5·92	6·94	8·01	8·55	8·89
Ditto per 100 square miles	*	19·02	24·37	31·89	33·98	36·13
Post Office—						
Letters, Newspapers, &c., per head mean population	*	76·23	84·65	83·93	105·07	101·68
Offices per 100 square miles	*	·008	·008	·007	·007	·007
Telegraphs—						
Miles Poles, per 100 square miles	*	·21	·22	·24	·28	·28
Offices, ditto	*	·003	·003	·003	·003	·003
Agriculture—						
Acres under cultivation per head	1·84	2·25	2·32	2·58	2·52	2·74
Wheat, bushels per acre	9·97	11·50	12·00	9·14	10·50	14·00
Oats, ditto	18·02	14·50	16·08	15·05	23·42	20·00
Barley, ditto	12·23	14·50	15·97	11·75	14·70	17.00
Potatoes, tons per acre	2·49	2·50	3·01	2·38	4·10	3·00
Hay, ditto	1·00	1·00	1·00	·94	1·00	1·00
Wheat, bushels per head	8·15	9·96	7·75	6·47	7·67	11·55
Oats, ditto	1·08	·68	·77	·61	·99	·96
Barley, ditto	2·58	2·63	2·22	1·67	1·75	2·16
Live Stock—						
Horses per square mile	·03	·03	·03	·04	·04	·04
Cattle ditto	·05	·07	·08	·09	·09	·11
Sheep ditto	·82	1·60	1·71	1·80	1·99	2·23

* Includes private lines.

New Zealand.

Statistical Summary for the Year 1878 *and Years* 1885–1889.

Area—104,471 Square Miles.

	1878.	1885.	1886.	1887.	1888.	1889.
Population	432,519	575,226	589,386	603,361	607,380	620,279‡
Revenue—						
From Customs £	1,344,560	1,422,052	1,315,801	1,273,236	1,390,717	1,473,379
Other Taxes £	174,945	674,160	646,361	602,999	640,941	616,956
Total Revenue £	4,167,889	4,096,996	3,688,016	3,463,495	4,109,815	3,991,919
General Expenditure—						
Interest on Loans £	1,130,997	1,698,599	1,753,243	1,499,784	1,569,556	1,616,501
Total Expenditure £	4,365,275	4,282,901	4,310,875	3,956,290	3,962,919	3,981,721
Loans Expenditure—						
On Railways £	700,260	736,009	629,347	820,289	284,391	289,571
Other Public Works £	587,609	1,042,875	704,136	1,160,361	455,283	191,775
Total Expenditure £	1,287,869	1,778,884	1,333,483	1,980,650	739,674	481,346
Public Debt on 31st December £	22,608,311	35,790,422	37,587,776	34,954,035	36,971,691	37,162,891
Imports £	8,755,663	7,479,921	6,759,013	6,245,515	5,941,900	6,297,097
Exports—						
Wool £	3,292,807	3,205,275	3,072,971	3,321,074	3,115,008	3,976,375
Gold £	1,349,459§	969,653§	1,074,455§	932,892§	1,157,055§	939,093§
Total Home Products £	5,780,508	6,591,911	6,386,682	6,551,081	7,255,128	9,042,008
Total Exports £	6,015,700	6,819,939	6,672,791	6,866,169	7,767,325	9,339,265
Shipping—Total Tonnage	884,983	1,032,700	990,903	983,337	1,057,906	1,195,886
Railways—						
Miles open	1053	1654	1721	1841	1861	1897‖
Train Miles	—	3,020,550	3,008,949	2,944,786	2,796,007	4,088,132
Cost of Construction £	7,466,122	12,349,082	13,017,567	13,352,978	14,210,214	14,640,941
Receipts £	569,898	1,047,418	998,768	994,843	1,052,864	1,160,736
Expenditure £	405,895	690,340	699,072	687,328	667,132	706,126
Telegraphs—						
Miles Poles	3434	4463	4546	4646	4790	4874
Offices	182	375	375	437	458	489
Cost of Construction £	—	571,893	596,793	—	625,086	631,144
Messages	1,260,324	1,774,273	1,836,266	1,835,394	1,765,860	1,802,987
Receipts £	73,284	101,652	106,638	106,548	133,925	106,462
Expenditure £	69,340	103,332	78,473	97,902	106,707	107,804
Post Office—						
Offices	1117	1011	1089	1117	1145	1189
Letters and Post Cards	15,778,944	37,149,788	39,518,479	40,985,467	42,052,117	44,151,393
Newspapers and Packets	9,410,366	17,499,838	17,791,706	19,601,020	20,931,157	22,102,509
Receipts £	158,998	197,456	206,029	213,355	207,402	197,311
Working Expenses £	164,108	171,281	168,069	165,762	160,278	154,101
Banks Deposits—Ordinary £	8,960,369	10,083,296	10,579,711	11,031,614	11,155,779	11,528,424
Savings £	1,043,204	2,142,560	2,133,861	2,407,776	2,691,693	1,883,043
Property—Assessed Ann. Value £	—	—	—	—	—	2,329,085
Agriculture—						
Wheat—Acres	243,406	173,891	253,025	357,359	362,153	335,861
Bushels	6,336,369	4,242,285	6,297,638	9,424,059	8,770,246	8,448,506
Oats—Acres	190,334	329,488	387,228	336,474	367,225	426,071
Bushels	5,929,962	8,603,702	11,973,295	10,512,119	10,977,065	13,673,584
Barley—Acres	22,713	34,603	21,535	27,912	46,027	42,402
Bushels	576,823	896,816	558,606	760,874	1,402,537	1,342,823
Potatoes—Acres	17,564	24,823	27,683	25,338	26,331	30,577
Tons	94,478	113,753	134,965	138,060	133,682	159,729
Hay—Acres	45,090	40,304	57,938	67,425	50,656	45,889
Tons	58,671	45,818	79,103	100,507	71,296	65,476
Land under Crop—Acres	—	—	—	—	—	1,560,605
Land under Cultivation—Acres	3,523,277	6,690,828	6,868,062	7,309,689	7,693,974	7,670,167
Live Stock—						
Horses	137,768	161,736*	187,382†	187,382†	187,382†	187,382†
Cattle	578,430	698,637*	895,461†	895,461†	895,461†	895,461†
Sheep	13,069,338	14,624,547	16,677,445	15,235,561	15,122,133	15,503,263
Pigs	—	200,083*	369,992†	369,992†	369,992†	369,992†

* Census, 1881. † Census, 1886. ‡ Exclusive of 41,969 Maoris. § Including specie. ‖ Does not include private lines.

New Zealand.

Statistical Summary for Year 1878 *and Years* 1885–9.

(Relative and Proportional.)

	1878.	1885.	1886.	1887.	1888.	1889.
Population—						
Persons per square mile	4·14	5·51	5·65	5·80	5·81	5·94
Birth Rate	42·14	34·85	33·15	32·09	31·22	30·07
Death Rate	11·01	10·76	10·54	10·29	9·43	9·40
Marriage Rate	8·03	6·76	6·03	5·97	5·97	5·92
Finance—						
Revenue per head £	9 17 9	7 5 0	6 6 9	5 16 2	6 15 9	6 10 1
Taxation ditto £	3 11 9	3 14 2	3 7 5	3 2 11	3 7 1	3 8 1
Ditto per cent. to Revenue	36·45	51·61	53·20	54·17	49·43	52·36
General Expenditure per head £	10 7 1	7 11 7	7 8 1	6 12 8	6 10 11	6 9 9
Public Debt per head £	48 7 10	62 4 4	63 15 6	57 18 8	60 17 5	59 18 3
Interchange—						
Imports per head £	20 13 6	13 4 9	11 12 3	10 9 5	9 16 3	10 5 2
Exports (Home Products) per head £	13 7 3	11 13 4	10 19 5	10 19 8	11 19 9	14 14 7
Total Exports per head £	14 4 1	12 1 5	11 9 3	11 10 3	12 16 8	15 4 4
Home Products per sq. mile £	55·33	63·14	61·17	62·97	69·44	86·55
Railways—						
Miles open & being constructed, per 100,000 persons	243·45	324·42	340·13	336·03	320·46	331·53
Ditto, per 10,000 sq. miles	100·79	176·00	190·00	192·63	185·69	194·79
Population per mile open and being constructed	410	314	294	301	312	305
Cost of construction per mile open £	7090·37	7466·00	7563·95	7617·22	7581·78	7717·94
Receipts ditto £	541·21	633·26	578·32	567·51	561·40	611·88
Ditto per train mile *s. d.*	—	6 11·22	6 7·69	6 9·08	7 1·62	5 8·14
Profit per cent. to cost of construction	2·19	2·89	2·30	2·30	2·60	3·11
Working Expenses per mile open £	385·46	417·38	404·79	392·09	364·12	372·23
Ditto per train mile *s. d.*	—	4 6·85	4 7·75	4 8·02	4 7·54	3 5·45
Ditto per cent. to Receipts	71·22	65·91	69·99	69·09	64·86	60·83
Service Train Miles per mile open	—	1826·21	1742·29	1679·85	1573·44	2155·05
Ditto per head	—	5·35	5·17	4·94	4·61	6·66
Ditto per 100 square miles	—	2893·16	2882·05	2830·65	2676·34	3913·17
Post Office—						
Letters, Newspapers, &c., per head mean population	58·21	96·72	98·45	101·76	104·04	107·94
Offices per 100 square miles	1·06	·96	1·04	1·07	1·08	1·14
Telegraphs—						
Miles Poles per 100 square miles	3·28	4·27	4·35	4·44	4·59	4·67
Offices ditto	·17	·36	·36	·41	·43	·47
Agriculture—						
Acres under cultivation per head	8·14	11·84	11·80	12·26	12·71	2·54
Wheat, bushels per acre	26·50	24·40	24·89	26·37	24·22	25·15
Oats, ditto	31·00	26·11	30·92	31·24	29·89	32·09
Barley, ditto	25·50	25·92	25·94	27·26	31·15	31·67
Potatoes, tons per acre	5·50	4·58	4·88	5·45	5·08	5·22
Hay, ditto ditto	1·25	1·14	1·36	1·49	1·41	1·43
Wheat, bushels per head	14 64	7·51	10·81	15·80	14·49	13·76
Oats, ditto	13·71	15·23	20·56	17·63	18·13	22·28
Barley, ditto	1·33	1·59	0·96	1·28	2·32	2·19
Live Stock—						
Horses per square mile	1·31	1·55	1·79	1·79	1·79	1·79
Cattle ditto	5·53	6·69	8·57	8·57	8·57	8·57
Sheep ditto	125·10	140·08	159·74	160·31	144·74	148·40

Australasian Colonies.

Statistical Summary for the Years 1885-1889.

Area—3,161,457 Square Miles.

	1885.	1886.	1887.	1888.	1889.
Number of Colonies	7	7	7	7	7
Population	3,334,325	3,426,562	3,551,751	3,678,046	3,786,827
Revenue—					
From Customs £	7,187,951	7,231,013	7,415,179	7,961,965	8,612,339
Other Taxes £	2,120,558	2,315,861	2,416,134	2,725,354	2,749,198
Total Revenue £	24,019,886	23,506,241	24,805,766	27,558,497	28,563,622
General Expenditure—					
Interest on Loans £	5,812,286	6,370,485	6,365,775	6,682,378	7,018,180
Total Expenditure £	24,185,533	26,319,140	26,236,841	27,162,318	28,170,120
Loans Expenditure—					
On Railways £	6,860,341	7,428,817	6,229,129	4,961,864	5,918,079
Other Public Works £	7,096,843	3,450,540	3,521,208	3,665,509	4,154,786
Total Current Year £	13,957,084	10,879,357	9,750,337	8,627,373	10,072,815
Public Debt on 31st December £	135,470,119	153,209,998	156,956,187	166,462,542	173,843,848
Imports £	63,268,491	59,733,693	57,420,836	65,256,881	68,849,089
Exports—					
Wool £	19,637,073	19,287,237	22,749,255	22,243,966	26,244,267
Gold £	7,929,499	—	—	—	9,535,225‖
Tin £	1,243,336	1,278,565	1,458,836	1,469,727	991,623
Silver £	*	*	*	*	4,036,433
Total Home Products £	40,150,517	37,899,739	42,239,829	47,562,170	49,639,929‖
Total Exports £	51,553,486	45,409,236	50,552,983	57,605,472	62,585,855
Shipping—Total Tonnage	14,520,976	15,008,744	12,966,392	14,689,766	15,993,658
Railways—					
Miles Open and being constructed	10,243	10,751	11,893	12,036	12,902
Train Miles	21,779,848	22,206,953	23,596,573	26,566,829	29,422,549
Cost of Construction £	78,774,368	86,259,312	89,647,004	93,501,617	101,934,596
Receipts £	6,893,193	6,852,229	7,244,586	8,180,220	8,748,876
Expenditure £	4,416,661	4,495,502	4,682,711	5,124,259	5,607,703
Telegraphs—					
Miles, poles	35,531	37,099	38,104	39,205	39,481
Offices	1812	1584	2079	2247	2403
Cost of Construction £	*	*	*	*	*
Messages	*	*	*	*	*
Receipts £	575,149	572,479	601,661	685,498	709,636
Expenditure £	*	*	1,143,732†	1,236,389†	1,201,852†
Post Office—					
Offices	5016	5236	5449	5608	5851
Letters and Post Cards	140,744,265	144,543,212	160,654,529	175,469,316	183,229,924‡
Newspapers and Packets	91,039,591	94,107,322	111,046,337	86,356,787‡	124,543,268
Receipts £	1,049,212	1,096,013	1,155,255	864,517§	1,256,827
Working Expenses £	1,502,535†	1,536,514†	1,620,183†	1,592,661†	1,595,993†
Banks Deposits—Ordinary £	*	*	*	*	105,875,934
Savings £	*	*	*	*	15,184,687
Property—Assessed Annual Value £	*	*	*	*	*
Agriculture—					
Wheat—Acres	3,471,163	3,652,045	4,007,929	3,569,849	3,870,346
Bushels	31,683,038	39,830,583	47,588,161	26,205,977	42,480,131
Oats—Acres	597,914	627,715	585,575	616,254	738,216
Bushels	14,472,224	17,509,477	15,982,012	14,971,267	21,198,226
Barley—Acres	143,126	89,044	99,860	157,528	169,420
Bushels	2,772,356	1,893,498	2,166,533	2,972,972	3,759,184
Potatoes—Acres	106,499	122,037	105,767	111,927	126,312
Tons	412,437	463,404	495,267	414,268	490,332
Hay—Acres	1,079,906	1,147,254	1,084,093	1,077,361	1,161,408
Tons	1,067,356	1,349,136	1,368,019	914,658	1,681,735
Land under Cultivation—Acres	13,453,404**	13,803,280**	14,490,654**	8,616,401¶	9,070,479¶
Live Stock—					
Horses	1,302,160	1,372,756	1,439,477	1,486,819	1,542,957
Cattle	8,068,205	8,264,778	8,959,043	9,211,801	9,497,665
Sheep	82,169,364	86,352,020	97,903,922	96,580,640	101,268,084
Pigs	959,942	1,143,966	1,206,262	1,171,697	1,131,547

* Not ascertained. † In several Colonies the Post and Telegraph Departments are worked together.
‡ Not including newspapers, New South Wales. § Not including receipts, Victoria. ‖ Including specie.
¶ Not including permanent artificially sown grasses. ** Including permanent artificially sown grasses.

Australasian Colonies.

Statistical Summary for Years 1885–9.

(Relative and Proportional.)

	1885.	1886.	1887.	1888.	1889.
Population—					
Persons per square mile	1·05	1·09	1·12	1·16	1·20
Birth Rate	34·89	34·55	34·42	34·07	32·99
Death Rate	14·83	14·34	13·64	13·41	14·28
Marriage Rate	7·76	7·46	7·19	7·48	7·18
Finance—					
Revenue per head £	7 6 8	6 19 9	7 2 3	7 12 8	7 13 1
Taxation ditto £	2 16 10	2 16 9	2 16 4	2 19 3	3 10 10
Taxation per cent. to Revenue	38·75	40·61	39·63	38·79	39·78
General Expenditure per head £	7 7 8	7 16 5	7 10 5	7 10 6	7 11 1
Public Debt per head £	40 12 7	44 14 3	44 3 10	45 5 2	45 18 2
Interchange—					
Imports per head £	19 6 4	17 15 0	16 9 3	18 1 7	18 9 0
Exports (Home Products) per head £	12 5 2	11 5 3	12 2 2	13 3 6	13 6 0
Total Exports per head £	15 14 9	13 9 10	14 9 10	15 19 2	16 15 5
Home Products per sq. mile £	12·70	11·98	13·36	15·04	15·70
Railways—					
Miles open & being constructed per 100,000 persons	312·74	322·11	376·24	333·45	345·78
Ditto per 10,000 sq. miles	32	34	37	38	41
Population per mile open and being constructed	325	310	299	300	293
Cost of construction per mile open £	9859	9849	9479	7768·17	9234
Receipts per mile open £	863·00	804·44	776·07	823·25	795·71
Ditto per train mile *s. d.*	6 3·95	6 2·05	6 1·68	6 1·89	5 11·39
Profit per cent. to cost of construction	3·14	2·73	2·86	3·27	3·08
Working Expenses per mile open £	552·78	527·76	501·63	515·70	510·02
Ditto per train mile *s. d.*	4 0·67	4 0·58	3 11·63	3 10·29	3 9·74
Ditto per cent. receipts	64·07	65·60	64·64	62·64	64·10
Service train miles per mile open	2725·70	2607·06	2527·75	2673·66	2676·00
Ditto per head	6·65	6·60	6·76	7·36	7·88
Ditto per 100 square miles	688·93	702·44	746·49	840·34	930·66
Post Office—					
Letters, Newspapers, &c., per head mean population	70·77	70·92	77·89	72·53	82·50
Offices per 100 square miles	·15	·16	·17	·18	·19
Telegraphs—					
Miles Poles per 100 sq. miles	1·12	1·17	1·25	1·24	1·25
Offices ditto	·06	·05	·06	·07	·08
Agriculture—					
Acres under cultivation per head	4·11	4·10	4·16	4·11	2·43
Wheat, bushels per acre	9·13	10·70	11·87	7·34	10·98
Oats, ditto	24·20	27·89	27·29	24·29	28·72
Barley, ditto	19·37	21·26	21·70	18·87	22·19
Potatoes, tons per acre	3·87	3·79	4·68	3·70	3·88
Hay, ditto	0·99	1·17	1·26	·85	1·45
Wheat, bushels per head	9·67	11·83	13·64	7·26	11·38
Oats, ditto	4·42	5·20	4·58	4·15	5·68
Barley, ditto	·85	·56	·62	·82	1·01
Live Stock—					
Horses per square mile	·41	·43	·46	·47	·49
Cattle ditto	2·55	2·61	2·83	2·91	3·00
Sheep ditto	25·99	27·35	30·97	30·55	32·03

Australasian Statistics, 1889.

	Victoria.	N. S. Wales.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.
Population ..... No.	1,118,028	1,122,200	406,658	324,484	43,698	151,480	620,279
Revenue—							
From Customs..... £	2,879,830	1,905,883	1,344,472	529,433	171,990	307,352	1,473,379
Other Taxes ..... £	869,840	771,286	171,752	181,815	22,258	115,291	616,956
Total Revenue..... £	8,675,990	9,063,397	3,440,249	2,270,433	442,725	678,909	3,991,919
General Expenditure—							
Interest on Loans..... £	1,459,242	1,805,770	1,059,769	798,991	68,170	209,737	1,616,501
Total Expenditure ..... £	7,919,902	9,250,271	3,594,625	2,355,927	386,000	681,674	3,981,721
Loans Expenditure—							
On Railways..... £	3,083,211	601,939	1,170,598	594,967	4245	173,548	289,571
Other Public Works ..... £	654,087	1,764,060	556,437	664,019	130,867	193,491	191,775
Total Current Year..... £	3,737,298	2,365,999	1,727,035	1,258,986	135,112	367,039	481,346
Public Debt on 31st December..... £	37,367,027	46,646,449	25,840,950	20,435,500	1,371,981	5,019,050	37,162,891
Imports ..... £	24,402,760	22,863,057	6,052,562	6,804,451	818,127	1,611,035	6,297,097
Exports—							
Wool..... £	5,928,847	10,785,070	2,680,134	2,194,701	395,903	283,237	3,976,375
Gold..... £	2,280,326	3,202,614†	2,857,030†	73,805†	58,871†	123,486†	939,093†
Tin..... £	368	447,396	157,867	—	300	345,407	*
Silver..... £	25,762†	1,979,828†	118,482†	1,901,157†	—	2847†	8357†
Total Home Products ..... £	9,776,670	17,423,311	7,511,744	3,694,692	748,899	1,442,605	9,042,008
Total Exports ..... £	12,734,734	23,294,934	7,736,309	7,259,365	761,391	1,459,857	9,339,265
Shipping—Total Tonnage.....	4,599,178	5,321,179	1,001,009	1,959,342	1,004,818	912,246	1,195,886
Railways—							
Miles open and being constructed ...	2883‡	2252‖	2635	1811	813‡	473	2035‖
Train Miles.....	10,680,743	7,789,242§	3,626,921	3,084,200	383,000	815,986	4,088,132
Cost of Construction ..... £	29,048,670	29,839,167	14,320,048	10,919,696	871,377	2,925,362	14,640,941
Receipts ..... £	3,110,140	2,538,477	796,344	927,812	40,849	174,518	1,160,736
Expenditure ..... £	1,945,837	1,634,602	594,649	519,978	54,339	152,172	706,126
Telegraphs—							
Miles Poles	3967	10,732	9456	5511	2961	1980	4874
Offices.....	656	485	343	210	42	178	489
Cost of Construction..... £	*	713,663	786,610	848,081	199,800	171,887	631,144
Messages	2,885,919	3,433,562	1,327,937	*	197,587	280,559	*
Receipts ..... £	159,093	213,776	93,297	100,558	10,165	26,414	106,462
Expenditure ..... £	*	*	117,570	177,987	*	21,809	107,804
Post Office—							
Offices.....	1600	1261	834	593	81	293	1189
Letters and Post Cards	48,097,268	53,971,300	13,070,083	16,388,607	2,737,034	4,814,239	44,151,393
Newspapers and Packets.....	27,473,020	44,400,200	12,851,834	9,998,836	1,640,506	6,076,363	22,102,509
Receipts..... £	370,000	395,584	133,469	107,560	13,367	39,536	197,311
Working Expenses ..... £	582,910	393,606	209,404	177,987	33,702	44,283	154,101
Bank Deposits—Ordinary..... £	38,768,936	32,755,605	10,182,388	6,822,501	837,694	3,958,848	11,528,424
Savings..... £	4,971,933	4,280,083	1,597,784	1,923,292	31,061	497,492	1,883,043
Property Assessed—Annual Value.. £	12,931,526	*	4,240,189	2,520,112	*	1,102,397	2,329,085
Agriculture—							
Wheat, acres	1,178,735	419,758	8459	1,842,961	35,517	49,055	335,861
Ditto, bushels	11,495,720	6,570,335	134,335	14,577,358	497,238	756,639	8,448,506
Oats, acres	236,496	22,358	750	10,297	2075	40,169	426,071
Ditto, bushels	5,644,867	543,330	14,561	131,449	41,500	1,148,935	13,673,584
Barley, acres.....	90,724	5440	1254	19,679	5475	4446	42,402
Ditto, bushels	1,831,132	113,109	26,630	246,841	93,075	105,574	1,342,823
Potatoes, acres	47,139	17,551	7185	6383	462	17,015	30,577
Ditto, tons	157,104	50,096	25,889	23,853	1386	72,275	159,729
Hay, acres.....	451,546	212,106	45,617	329,643	25,694	50,913	45,889
Ditto, tons	666,385	366,229	88,172	395,920	25,694	73,859	65,476
Land under cultivation	2,627,262	947,072	232,643	2,864,877	117,833	488,354	1,560,605
Live Stock—							
Horses	329,335	430,777	352,364	170,515	42,806	29,778	187,382
Cattle	1,394,209	1,741,592	4,879,416	324,412	119,571	150,004	895,461
Sheep.....	10,882,231	50,106,768	14,470,095	6,387,617	2,366,681	1,551,429	15,503,263
Pigs	249,673	238,535	80,730	106,856	27,079	58,632	369,992

* Not furnished, incomplete, or partly estimated. † Including specie. ‡ Information for year ending 30th June, 1889. § Exclusive of private lines. ‖ Includes private lines.

Australasian Statistics, 1889.

	Victoria.	N. S. Wales.	Queensland.	South Australia.	Western Australia.	Tasmania.	New Zealand.
Population—							
Persons per square mile	12·72	3·61	·61	·35	·04	5·78	5·94
Birth Rate	32·92	33·73	36·27	32·25	37·02	31·97	30·07
Death Rate	17·56	13·43	15·44	10·94	14·19	14·10	9·40
Marriage Rate	8·33	6·76	7·87	6·44	6·97	6·50	5·92
Finance—							
Revenue per head £	7 17 2	8 4 2	8 13 3	7 1 3	10 5 1	4 11 2	6 10 1
Taxation ditto £	3 7 1	2 8 6	3 16 4	2 4 6	4 10 3	2 16 10	3 8 1
Ditto per cent. to Revenue £	43·22	29·54	44·07	31·33	43·88	62·25	52·36
Government Expenditure per head £	7 3 5	8 7 7	9 1 1	7 7 3	8 19 4	4 11 7	6 9 9
Public Debt per head £	33 8 5	41 11 4	63 10 11	62 19 7	31 7 11	33 2 8	59 18 3
Interchange—							
Imports per head £	22 1 11	20 14 2	15 4 10	21 5 4	19 0 1	10 16 6	10 5 2
Exports, Home Products, per head £	8 17 0	15 5 8	18 18 4	11 11 0	17 7 11	9 13 11	14 14 7
Total Exports, per head £	11 10 8	21 2 0	19 9 8	22 13 10	17 13 8	9 16 2	15 4 4
Home Products, per square mile £	111·25	56·08	11·24	4·09	·71	55·03	86·55
Railways—							
Miles open and being constructed per 100,000 persons	258	222	648	566	503	312	328
Ditto per 10,000 square miles	328	72	39	20	2	180	195
Population per mile open and being constructed	388	498	154	179	199	320	305
Cost of construction per mile open £	13,210	13,409	6938	6219	4271	7801	7718
Receipts £	1414	1170	386	528	200	465	612
Ditto per train mile *s. d.*	5 9·89	6 7·72	4 4·70	6 0·20	2 1·60	4 3·33	5 8·14
Profit per cent. to cost of construction £	4·01	3·03	1·41	3·73	—1·55	·76	3·11
Working expenses per mile open £	884·87	753·43	288	296	266	406	372
Ditto per train mile *s. d.*	3 7·72	4 3·33	3 3·35	3 4·46	2 10·05	3 8·75	3 5·45
Ditto per cent. to Receipts £	62·56	64·39	74·67	56·04	75·17	87·19	60·83
Service Train Miles per mile open	4857	3459	1757	1756	1877	2176	2155
Ditto per head	9·55	7·06	8·92	9·64	8·76	5·39	6·59
Ditto per 100 square miles	12,153	2507	543	341	36	3113	2913
Post Office—							
Letters, Newspapers, &c., per head of mean population	67·53	48·89	65·28	82·48	101·68	73·11	107·94
Offices per 100 square miles	1·82	·41	·12	·07	·007	1·12	1·14
Telegraphs—							
Miles Poles per 100 square miles	4·54	3·45	1·41	·61	·28	7·55	4·67
Offices ditto	·75	·16	·05	·02	·003	·68	·47
Agriculture—							
Acres under cultivation per head	2·38	·86	·59	8·95	2·74	3·28	2·54
Wheat, bushels per acre	9·75	15·65	15·88	7·91	14·00	15·43	25·15
Oats, ditto	23·87	24·30	19·41	12·77	20·00	23·75	32·09
Barley, ditto	20·18	20·79	21·24	12·54	17·00	28·60	31·67
Potatoes, tons per acre	3·33	2·85	3·60	3·74	3·00	4·25	5·22
Hay, ditto	1·48	1·73	1·93	1·20	1·00	1·45	1·43
Wheat, bushels per head	10·41	5·95	·03	46·22	11·55	5·08	13·76
Oats, ditto	5·11	·49	·04	·42	·96	7·72	22·28
Barley, ditto	1·66	·10	·07	·78	2·16	·71	2·19
Live Stock—							
Horses per square mile	3·75	1·39	·53	·19	·04	1·14	1·79
Cattle ditto	15·86	5·61	7·29	·36	·11	5·72	8·57
Sheep ditto	123·82	161·27	21·65	7·07	2·23	59·18	148·40

COMPARATIVE Rate of Increase of Population in Australasia, Canada, United States, and United Kingdom during the last Ten years.

	Population.	Annual Rate p.c.	Doubling in years.
Australasia, 1889	3,786,827	3·70	19·06
Dominion of Canada, 1889	5,268,976	1·60	44·21
United States, 1890	62,000,000	2·18	32·18
United Kingdom, 1889	37,823,215	0·98	70·94

RATE of Progress in Australasia, based on the Results of the Quinquennial Period 1884–9.

	1884.	1889.	Increase.			Result 20 years hence (1909), if all items progress at rate of Population during last 5 Years.
			In Five Years.	Average per Year.	True Rate.	
Population, 31st December	3,233,041	3,786,827	553,786	110,757	3·19	7,120,000
Customs, current year £	6,709,547	8,612,339	1,902,792	380,558	5·00	16,196,050
Other Taxes, ditto £	1,757,140	2,749,198	992,058	198,412	8·98	5,169,850
All Taxes, ditto £	8,466,687	11,361,537	2,894,850	578,970	5·90	21,366,000
Customs and Excise, ditto £	7,112,731	9,126,663	2,013,932	402,786	5·11	17,102,700
Loans Expenditure, ditto £	10,037,925	10,072,815	53,286,966	10,657,393	...	...
Debt, 31st December £	120,850,558	173,843,848	52,993,290	10,598,658	7·30	326,931,400
Interest on Debt, current year £	5,477,578	7,018,180	1,540,602	308,120	4·97	13,198,100
Railway Construction to date £	70,636,119	101,934,596	31,298,477	6,259,695	7·37	191,700,000

RATE of Progress in Australia and Tasmania, based on the results of the Quinquennial Period 1884–9.

Population, 31st December	2,668,734	3,166,548	497,854	99,571	3·48	6,275,920
Customs, current year £	5,300,204	7,138,960	1,838,756	367,751	6·14	14,149,240
Customs and Excise, ditto £	5,712,388	7,597,807	1,885,419	617,084	5·87	15,058,600
All Taxes, ditto £	6,597,191	9,271,202	2,674,011	534,802	7·05	18,375,300
Loans Expenditure, ditto £	8,472,176	9,591,469	46,972,929	9,394,586	...	...
Debt, 31st December £	87,989,576	136,991,312	49,001,736	9,800,347	9·26	271,516,000
Interest on Debt, 31st December £	3,777,794	5,322,233	1,544,439	308,888	7·10	10,548,520
Railway Construction to date	58,825,925	87,293,655	28,467,330	5,693,466	8·22	173,014,000

SEVEN Colonies of Australasia, 1889.—Revenue, Expenditure, and Public Debt.

	N. S. Wales.	Victoria.	Queensland.	S. Australia.	Western Australia.	Tasmania.	Total Australia & Tasmania.	N. Zealand.	Total Australasia.	
	£	£	£	£	£	£	£	£	£	p.c.
					Revenue.					
Taxation.										
Customs	1,905,883	2,879,830	1,344,472	529,433	171,990	307,352	7,138,960	1,473,379	8,612,339	30·15
Excise	261,371	146,655	35,149	...	...	15,672	458,847	55,477	514,324	1·80
Other Taxes	509,915	723,185	136,603	181,815	22,258	99,619	1,673,395	561,479	2,234,874	7·82
	2,677,169	3,749,670	1,516,224	711,248	194,248	422,643	9,271,202	2,090,335	11,361,537	39·77
Special Public Services.										
Railways	2,875,135	3,104,907	799,779	910,561	40,150	75,922	7,806,454	1,018,211	8,824,665	30·90
Post and Telegraph	582,125	552,877	220,171	208,118	23,405	55,874	1,642,570	322,082	1,964,652	6·88
Other Public Services	467,695	251,539	43,556	148,250	1333	16,345	928,718	...	928,718	3·25
	3,924,955	3,909,323	1,063,506	1,266,929	64,888	148,141	10,377,742	1,340,293	11,718,035	41·03
Lands, Buildings, and Public Investments.										
Land Sales	1,149,171	494,733	304,676	53,570	9518	49,166	2,060,834	91,627	2,152,461	7·54
Rental Lands	988,392	121,295	344,112	120,676	77,498	21,725	1,673,698	208,614	1,882,312	6·59
Investments, &c.	42,237	111,112	...	...	...	24,363	177,712	...	177,712	0·62
	2,179,800	727,140	648,788	174,246	87,016	95,254	3,912,244	300,241	4,212,485	14·75

Other Sources	281,473	289,857	211,731	118,010	96,573	12,871	1,010,515	261,050	1,271,565	4·45
Total Revenue	9,063,397	8,675,990	3,440,249	2,270,433	442,725	678,909	24,571,703	3,991,919	28,563,622	100·0
				Revenue Expenditure.						
General Administration.										
Executive and Legislative	30,234	73,216	17,558	29,013	1940	3477	155,438	33,085	188,523	
Civil Establishment	1,365,185	146,617	421,644	74,031	28,994	37,451	2,073,922	40,101	2,114,023	
Pensions, Retiring Allowances, &c.	12,819	150,526		10,522	2921	14,133	190,921	41,030	231,951	
Customs and Excise	63,152	122,007	55,868	21,712	7718	8623	279,080	36,260	315,340	
Miscellaneous	683,380	40,564	...	29,359	21,435	6106	780,844	...	780,844	
	2,154,770	532,930	495,070	164,637	63,008	69,790	3,480,205	150,476	3,630,681	12·76
Law and Protection.										
Judicial and Legal	181,837	217,180	70,328	39,714	15,718	22,767	547,544	80,556	628,100	
Police	291,249	261,329	147,248	82,941	36,404	24,737	843,908	99,597	938,505	
Gaols, &c.	109,826	66,163	25,015	15,389	15,804	8281	240,478	36,646	277,124	
Defences	207,175	346,623	61,775	46,225	3697	10,369	675,864	57,520	733,384	
Miscellaneous	16,220	...	...	...	...	1777	17,997	...	17,997	
	806,307	891,295	304,366	184,269	71,623	67,931	2,325,791	269,319	2,595,110	9·12
Religion, Science, and Education.										
Religion	9026	...	...	...	3543	1287	13,856	...	13,856	
Science	20,910	20,017	4637	...	1475	39,905	47,039	3140	50,179	
Education	676,313	754,432	218,734	137,378	11,125		1,837,887	377,716	2,215,603	
	706,249	774,449	223,371	137,378	16,143	41,192	1,898,782	380,856	2,279,638	8·01
Hospitals & Charitable Institutions.										
Hospitals, &c.	9113	(a)	36,454	45,591	138	31,135	122,431	36,744	159,175	
Medical Provision	...	13,315	5282	5177	12,438		36,212	...	36,212	
Charities, &c	240,939	269,461	74,958	38,670	10,211	23,669	657,908	58,937	716,845	
Miscellaneous	...	1210	...	...	...	798	2008	...	2008	
	250,052	283,986	116,694	89,438	22,787	55,602	818,559	95,681	914,240	3·21

SEVEN Colonies of Australasia, 1889.—Revenue, Expenditure, and Public Debt—*continued.*

	N. S. Wales.	Victoria.	Queensland.	S. Australia.	Western Australia.	Tasmania.	Total Australia & Tasmania.	N. Zealand.	Total Australasia.	
	£	£	£	£	£	£	£	£	£	
Public Works Services.										
Railway Working Expenses	1,755,625	1,803,124	572,182	534,331	56,639	58,376	4,780,277	626,939	5,407,216	
Post and Telegraph	628,183	619,070	326,799	182,242	33,702	65,316	1,855,312	273,753	2,129,065	
Crown Lands Surveys	236,001	173,802	136,807	57,881	20,621	14,237	639,349	68,443	707,792	
Mines Department	139,428	119,139	24,908	1384	2151	7310	294,320	5809	300,129	
Roads, Bridges, Jetties, & Harbours	812,567	490,013	60,674	115,480	18,210	50,905	1,547,849	179,225	1,547,849	
Other Public Works	316,186	511,652	273,985	89,896	12,947	11,087	1,215,753		1,394,978	
	3,887,990	3,716,800	1,395,355	981,214	144,270	207,231	10,332,860	1,154,169	11,487,029	40·38
Interest on Public Debt	1,726,325	1,459,242	1,059,769	798,991	68,170	209,736	5,322,233	1,616,501	6,938,734	24·39
Other Expenses	...	261,200	...	...	...	30,192	291,392	314,719	606,111	2·13
Total Expenditure	9,531,693	7,919,902	3,594,625	2,355,927	386,001	681,674	24,469,822	3,981,721	28,451,543	100
Public Debt.										
Public Debt, 31st December £	46,646,449	37,627,382	25,840,950	20,435,500	1,371,981	5,019,050	136,991,312	37,162,891	174,154,203	
Mean Rate of Interest £	3·93	4·15	4·10	4·4	4·96	4·17	...	4·35	4·04	
Railway Construction.										
From Loans £	31,380,508	28,740,584	15,374,419	11,101,454	827,344	1,859,926	89,284,235	13,924,072	103,208,417	
Total Cost of Railway Construction on Lines open for Traffic £	30,196,504	29,048,670	13,332,046	10,919,696	871,377	2,925,362	87,293,655	14,640,941	101,934,596	
COMPARATIVE ANALYSES.										
Customs and Excise per head of population, 31st December	£ s. d. 1 16 6	£ s. d. 2 14 2	£ s. d. 3 7 10	£ s. d. 1 12 8	£ s. d. 3 18 3	£ s. d. 2 2 8	£ s. d. 2 8 0	£ s. d. 2 9 4	£ s. d. 2 8 2	

Public Debt per head of population, 31st December	41 11 4	33 8 5	63 10 11	62 19 7	31 7 11	33 2 8	43 3 3	59 18 3	45 18 2
Interest ditto, ditto	1 11 9	1 6 1	2 12 1	2 9 3	1 11 1	1 7 8	1 13 5	2 12 1	1 16 8
Customs and Excise *in excess* of Interest on Debt — Amount	£430,929	£1,567,243	£319,852	...	£103,820	£113,288	£2,275,574	...	£2,187,929
Customs and Excise *in excess* of Interest on Debt — Per head	4*s.* 9*d.*	£1 8*s.* 1*d.*	15*s.* 9*d.*	...	£2 7*s.* 2*d.*	15*s.*	14*s.* 7*d.*	...	11*s.* 6*d.*
Ditto *below* ditto — Amount	...	...	...	£269,558	...	...	...	£87,745	
Ditto *below* ditto — Per head	...	...	...	16*s.* 7*d.*	...	...	...	2*s.* 9*d.*	

RELATIVE VALUE OF PRINCIPAL ELEMENTS OF REVENUE AND EXPENDITURE PROPOSED BY SOME TO BE TRANSFERRED TO A FEDERAL GOVERNMENT OF AUSTRALASIA.

Revenue from Customs and Excise, and Post and Telegraphs ..... £	2,749,379	3,579,362	1,599,792	737,551	195,395	378,898	9,240,377	1,850,938	11,091,315
Expenditure—Customs, Post, Telegraphs, Defences, and Interest on Debt ..... £	2,624,835	2,546,942	1,504,211	1,049,170	113,287	294,044	8,132,489	1,984,034	10,116,523
Revenue Surplus ditto ..... £	124,544	1,032,420	95,581	...	82,108	84,854	1,107,888	...	974,792
Ditto Deficit ditto ..... £	...	...	...	311,619	...	...	...	133,096	
Revenue from Customs, Excise, and Post and Telegraphs, per head mean population	£ *s.* *d.* 2 9 10	£ *s.* *d.* 3 5 0	£ *s.* *d.* 4 0 7	£ *s.* *d.* 2 6 5	£ *s.* *d.* 4 12 0	£ *s.* *d.* 2 10 11	£ *s.* *d.* 2 19 3	£ *s.* *d.* 3 0 4	£ *s.* *d.* 2 19 5
Expenditure—Customs, Post, Telegraphs, Defences, and Interest on Debt, ditto	2 7 7	2 6 3	3 15 9	3 5 7	2 12 9	1 19 6	2 12 2	3 4 8	2 14 3
Revenue Surplus ditto, ditto	0 2 3	0 18 9	0 4 10	...	1 19 3	0 11 5	0 7 1	...	0 5 2
Ditto Deficit ditto, ditto	...	...	...	0 19 2	...	...	...	0 4 4	

Loans Expenditure of Australia and Tasmania.

Aggregate up to and including Year 1889.

For construction of	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia and Tasmania.	Total	
								Per cent.	Per Head.
	£	£	£	£	£	£	£	£	£
Railways	31,380,508	28,740,584	15,374,419	11,101,454	827,344	1,859,926	89,284,235	68·34	28·20
Telegraphs	726,807	..	786,610	815,588	219,553	97,160	2,645,718	2·03	0·84
Roads, Bridges, Jetties, Harbours	3,209,626	699,902	2,538,013	2,596,489	48,882	1,345,048	10,437,960	7·99	3·29
Public Buildings	1,227,769	1,904,049	788,264	680,957	..	520,053	5,121,092	3·90	1·62
Defences	657,604	98,299	138,163	229,496	..	111,391	1,234,953	0·95	0·39
Water Supply and Sewerage	4,122,823	5,769,133	221,170	2,685,603	..	..	12,798,729	9·80	4·04
Other Public Works or purpose	3,423,415	..	4,159,062	1,142,104	296,062	109,241	9,129,884	6·99	2·88
	44,748,552	37,211,967	24,005,701	19,251,691	1,391,841	4,042,819	130,652,571	100	41·26
Year 1889.									
Railways	601,939	3,083,211	1,170,598	594,967	4245	173,548	5,628,508		
Telegraphs	26,499	..	29,793	13,848	31,050	3518	104,708		
Roads, Bridges, Jetties, Harbours, &c.	264,254	72,486	154,818	93,156	32,331	122,911	739,956		
Public Buildings	103,513	97,533	65,277	36,532	..	32,664	335,519		
Defences	56,440	..	11,558	6520	..	7980	82,498		
Water Supply and Sewerage	371,604	484,068	45,368	236,521	..	..	1,137,561		
Other Public Works or purpose	941,750	..	249,623	277,442	67,486	26,418	1,562,719		
	2,365,999	3,737,298	1,727,035	1,258,986	135,112	367,039	9,591,469		
Public Debt, 31st December.									
Amount £	46,646,449	37,367,027	25,840,950	20,435,500	1,371,981	5,019,050	136,680,957		
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.		
Per head	41 11 4	33 8 5	63 10 11	62 19 7	31 7 11	33 2 8	43 3 3		

APPENDICES.

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(A.)

MINERAL RESOURCES OF TASMANIA.

(By A. MONTGOMERY, *M.A., Government Geologist.)*

THE mining industry of the Colony is one of its most important sources of wealth at the present time—tin, gold, and other minerals constituting about one-third of the total value of its exports.[a] When the silver-lead fields of the West Coast come into productive activity, as they shortly will, mineral produce will form a still larger and more important fraction of the whole. The following table, taken from the "Statistics of the Colony of Tasmania, 1889," page 347, shows the different kinds of minerals raised in commercially valuable quantities, and their relative importance :—

General Return.

MINES and Quarries for the Year 1879, and Years 1885-6-7-8-9.

	1879.	1885.	1886.	1887.	1888.	1889.
GOLD.						
Number of men employed	2060	868	837	824	893	1128
Quantity raised..... ounces	60,155	41,240	31,014	42,609	39,611	32,332
Value of Gold produced	230,895	155,309	117,250	158,533	147,154	119,702
SILVER. (Argentiferous Lead.) ...						
Number of Mines returning information	...	...	...	...	...	11
Number of men employed	...	...	...	...	34	71
Quantity of ore raised ..... tons	...	...	...	...	417	415
Value of products..... £	...	...	...	...	5838	7044
COPPER.						
Number of Mines returning information	...	...	...	...	1	1
Number of men employed	...	...	...	...	8	6
Quantity of ore raised ..... tons	...	...	...	...	100	50
Value of products..... £	...	...	...	...	...	300
TIN.						
Number of Mines returning information	...	206	174	311	176	82
Number of men employed	...	1536	1499	2262	1912	2227
Quantity of ore raised ..... tons	5790	5461	5728	5702	5245	5550
Value of products* ..... £	347,400	289,433	355,136	399,140	356,660	321,900
COAL.						
Number of Mines returning information	...	...	...	...	...	...
Number of men employed.....	...	49	127	85	104	134
Quantity of ore raised..... tons	9514	6654	10,391	27,663	41,577	40,300
Value of products† ..... £	9514	6654	10,391	27,663	41,577	40,300
STONE.						
Number of Quarries returned ...	...	17	26	27	26	32
Number of men employed	...	184	132	144	96	128
Quantity of stone raised :—						
Bluestone ..... cub. ft.	2800	...	...	...	...	2600
Limestone ..... tons	1824	1330	3703	2443	1808	2028
Lime ..... bushels	12,900	3450	...	...	...	...
Lime ..... tons	...	3000	...	...	...	...
Freestone, Flagstone, Building-stone ..... cub. ft.	131,721	228,359	402,868	248,617	230,442	126,883
Rubble or Metal ..... cub. ft.	3000	459,000	...	...	...	...
Rubble or Metal ..... tons	...	...	726	...	...	12,469§
VALUE OF PRODUCTS.						
Bluestone ..... £	...	...	...	...	...	13
Lime..... £	...	2163	4593	2363	2150	2449
Building-stone ..... £	...	9437	8255	6314	3831	3189
Rubble or Metal ..... £	...	...	...	2280	2165	2529
Total Value of Output of Mines and Quarries ..... £	587,809	462,996	495,625	596,293	559,375	497,426

* General market value. † Local market value. § Dray loads.

[a] "Statistics of the Colony of Tasmania, 1889," page 186.

From the above it will be seen that Tin is as yet by far the most important mineral product, Gold coming next in value, and then Coal. Up to the end of 1890 there has been no very large export of Silver-Lead Ore or of smelted Argentiferous Lead, but these will form an important factor in future returns.

Useful minerals are well distributed throughout the country, there being few large areas in it where none are found, the principal one being the great greenstone plateau in the centre of the island, which appears to be very barren of mineral wealth. Where the more valuable metallic ores do not occur there is usually coal, sandstone, limestone, or some other useful mineral to be had. The metallic ores, as might be expected, are found mostly in the regions where the crystalline, metamorphic, and oldest sedimentary rocks occur; hence in the North-Eastern District, from Port Sorell to Seymour, and on the West Coast. The later rocks of the coal measures contain such minerals as coal, fireclay, ironstone, sandstone, &c. They are most extensively developed in the Counties of Monmouth and Pembroke, though as yet the most important collieries are in the Mersey and Fingal districts.

*Tin.**

Here, as elsewhere, Tin is intimately associated with granitic rock. Almost all the parts of the country where granite is found are more or less tin-bearing, the metal being found either in the rock itself or in alluvial deposits clearly derived from its disintegration. Outside of the granite country no tin ore of consequence is found, hence a glance at the geological map at the beginning of Chapter V. finds at the same time the granite and the tin-bearing country.

The principal workings are in the valleys of the Ringarooma and George's Rivers, at Mount Bischoff, and at Ben Lomond. Mount Heemskirk was for a time the scene of great activity in tin-mining, but has been practically abandoned for the present, the field not having come up to the somewhat extravagant expectations that were formed of it. A more extended list of the places where tin has been found is given in Chapter V. The deposits of cassiterite may be grouped in three classes—(1) *Lodes and Veins*, (2) *Impregnations*, and (3) *Alluvial Deposits*. There has hitherto been but little true lode-mining done, the lodes yet found having been as a rule small. The celebrated Mount Bischoff deposit, though often spoken of as a lode, is of a somewhat mixed character, combining features of all three of the above sorts of deposits. Much of the surface stuff is of distinctly an alluvial nature, containing waterworn stones of miscellaneous nature. The deeper workings of the Red Face have, however, revealed ore that has not been moved by water, and of the true lode character. The underground workings of the Mount Bischoff and Stanhope Companies have revealed true fissure veins carrying tinstone, and also dykes of quartz porphyry impregnated more or less with the ore. It is probable that the great surface deposit that has been worked so successfully by the Mount Bischoff Company is the result of the wearing down and concentration by atmosphereric agencies of a large mass of rock which was at one time penetrated in every direction by large numbers of tin-bearing lodes, veins, and porphyry dykes. The tin ore, from its great weight and resistance to the chemical action of the atmosphere, has remained unchanged almost *in situ*, while much of the lighter and more decomposable rock in which it was enclosed has been disintegrated and washed away. There is thus a deposit of alluvial tin ore resting immediately upon the parent lodes. It is possible that the upper parts of these lodes were larger and richer than any yet found underground. The Red Face workings are in the top portion of what is probably a bulge in one of the lodes. The ore is here found in a matrix of brown oxide of iron, which is most likely

* See also pp. 91–96, *ante*, for further particulars regarding this important mineral.—ED.

the result of oxidation of a large mass of iron pyrites. The cause of the formation of deposits of tin ore at Mount Bischoff appears to have been an intrusion of eurite porphyry and topaz rock through the ancient sandstones and slates of which the main mass of the mountain is composed. As above mentioned, the porphyry itself frequently contains tin ore, and veins in it and in the adjacent slates are often richly charged. In the vicinity of some of the intrusions almost every joint in the country rock is coated with crystals of cassiterite.

Lodes have also been worked at Mount Heemskirk, the Blue Tier, and Ben Lomond. The Heemskirk lodes were not payable under the conditions of working at the time, but are likely yet to be worked. At the Blue Tier lodes been have mined upon by the Lottah, Full Moon, and Wellington Companies, but as yet without commercial success, the lodes being small, though often very rich. At Ben Lomond the Great Republic mine has been working a lode with considerable success, very rich ore being frequently obtained. A recent crushing of 34 tons is reported to have yielded 2½ tons of dressed tin ore, an excellent result.

Throught the granite country rock of the Blue Tier, Mount Cameron, and other parts of the Ringarooma District, it is a common thing to find numerous small veins of quartz often carrying rich tin ore. These are not generally numerous enough to constitute a true "stockwork" and are not large or regular enough to be worth mining upon, but are sufficient to have supplied a very large quantity of alluvial tin ore in course of time as the country rock containing them has been worn away. The occurrence of these numerous veins renders it very probable that larger and perhaps payable lodes will yet be found.

A second class of tin ore deposits has been referred to above as "*Impregnations.*" Dykes of quartz porphyry found traversing the granite rocks of the Mount Cameron and Blue Tier Districts have been found frequently to be richly impregnated with tin ore. Such dykes are well seen in the Anchor, Full Moon, Wellington, and M'Gough's properties at the Blue Tier. Efforts to work these dykes have not been altogether successful up to the present, owing in a great measure to inadequate and badly designed machinery, but sufficiently so to demonstrate that with extensive and cheaply working crushing and dressing-plant the mines would most likely be payable.

The third class, or *Alluvial Deposits*, is the most important of all as regards production of tin. These deposits may be distinguished as of two groups, (*a*) *Tertiary*, and (*b*) *Recent*. The former form the so-called "Deep Leads" or "Deep Ground" and have been laid down by a system of watercourses different from that now prevailing, while the latter are evidently deposited by the now existing streams. The mines in the vicinity of Derby are good examples of the Tertiary Alluvials, the stanniferous "wash" occupying the bed of an ancient watercourse, which, subsequently to its filling with the gravel, has been covered by volcanic ashes and basalt flows, and entirely obliterated. The "lead" runs right across the present bed of the Ringarooma River, and under what are now hills 200 or 300 feet in height. In the same district the recent stanniferous deposits are exemplified by the gravels of the Cascade River. Under the basalts of Tertiary age in the vicinity of Mount Bischoff alluvial gravels have also been found, though not bearing tin to any payable extent so far as yet discovered. Deep leads also occur in the neighbourhood of George's Bay. All throughout the alluvial mines of the North-Eastern District there is abundant evidence that the tin ore has been deposited in the first instance not so much by the present streams as by older ones, and that these older deposits have been cut through in every direction by more modern watercourses, leading to a redistribution and

resorting of their contents. Many of them are thus somewhat curious mixtures of Recent and Tertiary deposits. This is well seen in the neighbourhood of Gladstone.

From the gravels, whether Tertiary or Recent, the tin ore is generally obtained directly by sluicing. In some cases, owing to the great depth of the overlying basaltic covering on the deep leads, the gravel has to be extracted by regular mining operations, the ground being systematically blocked out, and the richer wash hauled to the surface to be sluiced. Where enough water is readily available hydraulic sluicing is employed, but owing to difficulties in bringing in sufficiently large supplies for this purpose the method is not so extensively used as it might be, and ground-sluicing with small supplies of water under low pressure is most commonly adopted. Extension of the hydraulic system would enable a much larger quantity of gravel to be treated, and at much less cost. The great deposit worked by the Mount Bischoff Company is treated by a combination of sluicing and ore-dressing operations befitting its mixed alluvial and lode character. The tin-bearing material is quarried in large open faces, and the softer portion of it at once treated in box-sluices, while the harder material, containing stones of quartz porphyry and silicious limonite charged with tin ore is sent to a stamping battery. The stuff which has been treated in the box-sluices, after a partial concentration there, also goes to the battery. The crushed ore is treated in a system of classifiers, jiggers, buddles, and convex slime-tables, the whole forming one of the most complete tin-dressing establishments in the world.

The black tin, or dressed tin ore, from all parts of the colony is mostly all smelted in the works of the Mount Bischoff Company at Launceston, only a small proportion being exported for smelting elsewhere. The furnaces are reverberatory ones of the Cornish type. Newcastle (New South Wales) coal is used as fuel, and a little lime is required as a flux.

*Gold.**

Tasmania is not a large producer of gold compared with the mainland of Australia, though possessing for her size a fair amount of auriferous wealth. It occurs, as in most places, both in reefs of quartz and in alluvial deposits. No very large quantities of auriferous gravel have been found, the alluvial gold being mostly got in shallow workings in the beds of existing streams, though, as in the case of tin ore, there is frequently evidence that these deposits result from the re-washing of older ones. On the West Coast, in the vicinity of the Pieman River, Long Plains, and Mount Lyell, there are considerable masses of gravel, probably of Tertiary age, containing a little gold, in which there is yet a probability of payable leads being found. At Beaconsfield an ancient Tertiary lead has been proved by several shafts and bore-holes, but has not as yet been worked with any success, though promising very fairly. Another effort to overcome the difficulties of its exploitation is now about to be made by the Ophir Gold Mining Company of Sydney.

Alluvial gold has been got in some quantity at Beaconsfield, Lefroy, Lisle, Fingal, and various places on the West Coast, as shown by the following table, reproduced from Chapter V., Official Record, 1890,† which also shows the localities where reef gold is obtained, and the relative amount of gold produced from each place and each source between 1866 and 1888.

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* See also pp. 97–113, *ante*, for a more extended account of this precious metal.

† See also p. 103, *ante*, showing results up to year 1889.—ED.

District.	Gold.			Per cent. to Total.
	Alluvial.	Quartz.	Total.	
	oz.	oz.	oz.	
Beaconsfield	33,136	265,371	298,507	55·91
Lefroy and Back Creek	9243	82,573	91,816	17·26
Lisle	71,660	...	71,660	13·51
Fingal and Mangana	9016	19,215	28,231	5·25
West Coast	23,907	745	24,652	4·69
Mount Victoria	...	9695	9695	1·88
Denison, Golconda	260	2951	3211	0·56
Other places, including Gladstone, Hellyer, Minnow, Forth, and Cam Rivers, Branxholm, &c.	2824	2246	5070	0·94
	150,046	382,796	532,842	100·00
Per cent. to total	28·16	71·84	100·00	

The principal quartz mining districts at present are Beaconsfield, Lefroy, and Mathinna. Most of the reefs are found in slates, schists, and sandstones of Silurian or Archæan age. The Tasmania mine at Beaconsfield has been by far the largest producer of gold, having yielded, from 1877 to 1889, 278,661 ounces, of the value of £1,003,183, and paid in dividends £567,875. The reef has carried gold from the surface down to 450 feet, the deepest level yet worked, the metal occurring most plentifully in several rich shoots which dip easterly in accordance with the dip of the enclosing country sandstones. A diamond-drill bore-hole has cut the reef at a depth of 700 feet, the core showing gold freely, so that a continuance of rich ore in depth is confidently looked forward to.

*Coal.**

Though numerous discoveries of coal have been made at various places throughout the colony, only a few of the seams have yet been practically worked. The Coal Measures are extensively found in the north from the River Don to the Tamar in the County of Devon, and in the east in the Counties of Monmouth, Pembroke, Somerset, and Glamorgan. A considerable area up the Huon valley and along the shores of D'Entrecasteaux Channel is also occupied by them. In the County of Cornwall the extent of coal-bearing country is not large, but is of great importance, the large seams worked by the Cornwall and Mount Nicholas Companies being there situated. These two collieries raise more coal at present than all the rest of the colony.

The coal-bearing rocks belong to two distinct geological horizons, and are known as the Lower and Upper Coal Measures, the former being of Carboniferous age, and the latter referred to the Mesozoic Period. The Older Coal Measures are somewhat restricted in occurrence, being found only in the Mersey and Don Basins in the north, and at Adventure Bay in the south.† The Upper Coal Measures cover a much larger area, comprising extensive districts in the counties above named.

In the Mersey district (Lower Measures) it is doubtful whether there is

* See also the account of Coal and Coal Seams, pp. 115–118, *ante*.

† The coal seam worked at Port Cygnet may also be referred to the Older Coal Measures of Tasmania.—Ed.

more than one seam of coal of any importance yet found, though, being much broken by faults, it appears at varying elevations. It is usually from one to three feet in thickness, and supplies a very fair coal, non-caking, and containing a good deal of sulphur, but still of very useful quality. Several pits have been opened upon it from time to time, and an attempt is now being made to prove the strata more thoroughly and to open up the seams still further.

In the upper coal measures there are a large number of seams of coal, but as the strata are very much broken by faults it is not yet possible to establish a relation between the seams found even in closely adjoining districts, and no accurate estimate of the number of separate seams can therefore be made. The principal workings have been at Mount Nicholas, Longford, Sandfly, Jerusalem, York Plains, the Douglas River, and Port Arthur; but coal is known to exist at numerous other places, and, doubtless, will be worked as time goes on and facilities for getting the mineral to market increase. The coal is, generally, non-caking, and contains a large percentage of ash, but, though not of first-class quality, is very useful for steam purposes, and when burned on a grate properly adapted for such fuel it develops a very good heating effect. Most of the seams have as yet been worked only comparatively near the surface, and it is probable that when they are traced to greater depths and into undisturbed strata the quality will improve. A great deal has yet to be done to develop this important source of wealth.

*Silver and Lead.**

An immense area of ground has within the last three or four years been taken up in mining leases in the neighbourhood of Mount Zeehan and Mount Dundas on the West Coast, and near the Heazlewood and Whyte Rivers. About 130 square miles of ground have been taken up in mineral leases or applied for in these fields. Argentiferous lead ore has long been known to exist in the neighbourhood of the Penguin Creek, and more recently in the vicinity of Mount Claude and at Mount Bischoff; but it is only lately that the discoveries have assumed their present great importance. The three principal silver-lead fields,—Mount Zeehan, Mount Dundas, and Heazlewood,—show considerable similarity in their geological structure, the country consisting of Silurian slates, sandstones, and limestones, penetrated more or less by eruptive rocks. Of these latter a serpentinous greenstone, ranging from pure green serpentine to diabase and gabbro in character, is the most largely developed, occupying large areas of ground at Mount Dundas and the Heazlewood, and bounding the Zeehan field on the western side. Besides this rock there are other rocks of volcanic origin appearing as tuffs and breccias interbedded with the slates and sandstones and as dykes penetrating them. These rocks are so entirely decomposed and altered by weathering agencies that their exact character cannot be certainly determined. The commonest sort of them is a granular-looking clay rock, much mottled and coloured by oxide of iron and speckled with whitish dots of kaolin, resulting from the alteration of felspar crystals. Through all these rocks, slates, sandstones, limestones, serpentines, and tuffs, true mineral lodes are found, containing argentiferous galena and carbonate of iron principally, also blende, iron pyrites, quartz, dolomite, and other minerals. The main lines of load in all three fields appear to have a general course between N.W. and N.N.W., thus being roughly parallel to the axes of the West Coast and Meredith Ranges. In the Zeehan field, and at Mount Dundas to a less extent, another set of lodes, running in a north-

* See also pp. 108–113, *ante*, for further information relating to Silver and Lead.—ED.

easterly direction, and so crossing the first set, is also found. These lodes appear to be shorter and, on the whole, less strong than the north-westerly ones, but equally rich, or even richer, in mineral contents. It is not yet determined if these two sets of lodes are of contemporaneous origin, or which one is younger than the other if they are of different age of formation.

Where the lodes crop out in high ground they are almost always more or less thoroughly oxidised to gossans, consisting mainly of oxides of iron and manganese, and rarely carrying any payable quantity either of lead or silver. Occasionally, however, pyromorphite (phosphate of lead) and crocoisite (chromate of lead) are found in them, and sometimes chloride and other ores of silver. As a rule, however, the ferruginous outcrops are poor, the metallic contents having apparently been leached from them. In most cases work has not yet proceeded far enough to show if there is an enrichment of the lode beneath the oxidised capping; but the discovery of extremely good carbonate of lead, and of kaolin charged with carbonate of lead and silver ores, immediately above galena in the Silver Queen mine at Zeehan, and of rich carbonate of lead in the Maestri Broken Hill mine at Mount Dundas, seems to point to the inference that the lodes will be found to be so enriched beneath the gossans. In Balstrup's mine the gossan cut in an adit a considerable depth below the surface is markedly richer both in lead and silver than on the surface.

The preponderance of carbonate of iron over quartz in the gangue of the lodes, and the generally pure character of the galena, are very favourable for the easy smelting of these ores. In some of the mines, however, there are large quantities of zinc blende and pyrites, and the treatment of these ores will prove more difficult, dressing works being required to separate the various constituents. The galena is generally rich in silver, the mean of 71 assays, by Messrs. Ward & Provis, giving 63½ per cent. of lead and 65 ozs. of silver to the ton. Frequently it carries over 100 ozs. of silver per ton, and in the ore from a few of the mines a little gold has also been found. Sometimes the ore contains antimony, and this antimonial ore appears to be generally very rich, assays of as much as 1800 ozs. to the ton having been obtained from it. No smelting works have yet been erected on the fields, their state of development and the means of communication being not yet fit for their establishment and support. Owing to the wet and swampy nature of the ground, and to its being covered with dense forest, it is almost impossible to get any machinery on to it without enormous expense. Communication by means of roads, tramways, and railways is being established between the mineral fields and the main centres of population; but the work is necessarily slow, and till it is completed no great progress is possible. A railway is in course of construction from the port of Strahan, on Macquarie Harbour, to Mount Zeehan, and a tramway from Zeehan to Mount Dundas. When these are completed the fields should make rapid progress. The Heazlewood and Whyte River fields are in the same way not able to make much advancement, pending the completion of the road to Waratah or of a tramway projected by the Godkin Company. These factors have to be considered in explanation of the small export of ore from so large and promising a mineral district. At Mount Zeehan, and to some extent at Dundas and Heazlewood also, heavy drainage machinery will have to be erected before ore can be raised in quantity to support smelting works, and till good means of carrying such plant to the ground have been perfected work must almost be at a standstill. The natural difficulties in getting a mine into working order in these fields are very considerable, and time must be expended to overcome them. Less than two years, however, ought now to show a large production of lead and silver. It is not yet certain whether furnaces will be erected at Mount Zeehan or at

Strahan to smelt the ore from the Zeehan and Dundas mines. Practical considerations of cost of obtaining ore, fuel, and flux will decide their location.

In the Godkin mine at the Whyte River a large quantity of native silver has been found in galena. The country rock where this occurs is limestone: where the lode passes into sandstone it contains chloride of silver and but little lead ore. The owners are about to erect smelting works of their own, and to build a tramway to connect their mine with the Emu Bay and Mount Bischoff Company's Railway at Waratah.

From the richness of the lodes, their large number, and the great extent of country over which they are distributed, there is every reason to expect with confidence that the West Coast Silver-Lead Fields will be large and permanent sources of wealth to the Colony. The lodes are true fissure veins, and will doubtless extend to any depth to which they may be followed. From the character of the fields it may be predicted that, while individual mines will have frequent vicissitudes of fortune, the district as a whole will keep up a steady output of metal, the number of known veins being a sufficient guarantee that as one rich bunch of ore gives out, others will be found in previously poor lodes.

Indications of the probable extension of the present known silver fields are quite numerous, and there is reason to expect that a great part of the Silurian and Archæan formations on the West Coast will prove rich in argentiferous and other minerals. These formations appear to be highly metalliferous all throughout the Colony.

Copper.

Native copper has been found in considerable quantities in the Mount Lyell District, and small quantities of copper ores are found with the silver-lead minerals in parts of the West Coast fields; but, with the exception of the deposits of copper pyrites at Saxon's Creek, in the West Tamar District, no discoveries of this metal have yet been made of sufficient importance to be worked. Very good chalco-pyrite has, however, been got at Saxon's Creek, and a company has recently been formed to work the mines.

Bismuth.

This metal has been found in large quantity in hornblende rock at Mount Ramsay, the deposit being described some years ago by Professor Ulrich as "a discovery representing to my knowledge one of, if not the most important and richest made of this rare metal in recent times." No mining work of any extent has yet been done, though efforts are now being made to have the deposit regularly opened up.

Zinc.

Blende occurs frequently in some quantity in parts of the West Coast silver-lead fields, and as it is often argentiferous it will no doubt be worked for silver. Should it be found in sufficient quantity to support special works for its reduction it will be of value for its zinc as well. Present appearances favour the belief that when ore-dressing is thoroughly established at Zeehan, and the Heazlewood and the mines are in full working order, there will be enough blende separated from the galena ores to render its special treatment necessary, and a small production of metallic zinc may therefore be anticipated.

*Iron.**

The Colony has rich stores of the ores of iron, but commercial conditions do not yet allow of their being profitably worked. Near Beaconsfield there

* See also pp. 89-90, 457, for further information relating to Iron.—ED.

are extensive deposits of red and brown hematite and magnetite, the latter containing a little chromium. Brown hematite of good quality is found also on the east side of the Penguin Creek, and red hematite at Marsden's Hill. Brown hematite and magnetite occur on the west side of the Mount Zeehan silver field; and throughout all the West Coast silver fields the immense outcrops of manganiferous brown hematite would be of value as iron ores under favourable market conditions. Doubtless many other deposits of iron ore than are now known exist throughout the Colony, but owing to their being at present of no market value there has been no inducement to look for them. In course of time the extensive and rich stock of iron ore in this country will be sure to be of great value, and will be the basis of large industries.

Nickel.

The hydrous carbonate of nickel *(zaratite)*, and silicate of nickel, have been found in the serpentine rocks of the Heazlewood District, but it is very doubtful if there is enough ore to pay for working.

Rarer Minerals.

None of these are yet exported, though several occur in sufficient quantities to be of some commercial value. *Wolfram* has been found with tin ore at Ben Lomond, the Blue Tier, and other places, occasionally in considerable masses worth saving as a by-product while mining for the more valuable tin ore. *Molybdenite* occurs in much the same way, and, like wolfram, has a small commercial value. *Chromite* or *chromic iron ore* has been found in small quantities in the serpentine rocks of the Heazlewood district, and might perhaps be found in larger masses if looked for. Good parcels of this ore are readily saleable. In the Ben Lomond district *arsenolite*, or natural white arsenic, has been found in unusually large and solid masses, no doubt derived from the oxidation of arsenical pyrites. If found in any quantity this could very easily be refined to white arsenic for export. *Alunogen*, or sulphate of alumina, occurs in the neighbourhood of Chudleigh, along with sulphates of magnesia, iron, and other bases. The quantity easily available is reported to be very large: if so, it would probably be worth refining to a marketable product.

Precious Stones.

One small *diamond* is said to have been found in the Arthur River district. *Sapphires*, some of good size and quality, are frequently found in the tin drifts of the Weldborough and other north-eastern districts, along with *garnets, spinnels, zircons, topazes*, and occasionally *beryls* and *chrysoberyls*. The *topazes* of Flinders' Island are very large and fine, and are often cut and sold as "Flinders' Island diamonds." Most of the varieties of quartz, *rock crystal, chalcedony, agate, cornelian, onyx, jasper*, &c., are found in the Colony. Such as have a good colour have always a market value when cut and polished. In the tin-drifts at Gladstone large crystals of *smoky quartz* are very common. They are gathered by the Chinese, and exported by them for the manufacture of dark spectacles.

Ornamental Stones.

Very pretty green *serpentine* of various shades is found near Beaconsfield, Mount Dundas, and the Heazlewood. It takes a good polish, and might be used for a variety of indoor ornamental work. The fine crystalline dark blue limestone of Silurian or pre-Silurian age found at Beaconsfield, in

the Mersey Basin, on the Gordon River, and elsewhere, takes a very fine polish, works well, and yields an excellent dark or *black marble*, occasionally very prettily variegated with white calcite veins. Should a place be found where this stone could be got in large strong blocks close to a shipping-place, marble quarries would probably give good profits. A very handsome *shell marble* occurs at Maria Island, and could be readily put upon the market. Many of the varieties of *granite* found in Tasmania are very well fitted for ornamental and monumental purposes, and will doubtless be much used when facilities exist for getting the stone cheaply to the ports.

Building Stones.

Quarries were at one time opened for *slate* in the Tamar District, but have been abandoned. Some fair slate was obtained, but the bulk of the product was not of good quality. Perhaps, as the material has been shown to exist in the country, future operations will result in finding a really good article. The *greenstone* (diabase) so common in many places, is much used for road metal, manufacture of concrete, foundations for buildings, paving, and rough building. *Sandstones* belonging to the Upper Coal Measure series are very largely used for building purposes, dressing easily, and lasting well. Many of the best buildings in Hobart and other towns are built of this sort of stone. It is usually of a yellowish or brownish tint, but is occasionally almost pure white. Quarries of this white sandstone have been worked at Okehampton and Prosser's Bay, the stone being exported to Melbourne. Owing to the great expense of getting it to market the quarries have been practically abandoned. Good grindstones are cut still at Prosser's Bay. *Fireclay* of good quality is found with many of our coal seams, but is not yet made much use of, while *brick clay* of various qualities is common almost everywhere, and is much used locally. *Lime* and *hydraulic lime* are easily obtained from the limestones common in the Silurian and Coal Measure formations. The dark crystalline Silurian limestones generally afford a purer lime than the shell limestones of the Coal Measures, which are more hydraulic when burned. Very good *Portland cement* has been made from some of the hydraulic limestones of Maria Island, and its manufacture promises to be an important industry.

A review of the Mineral Resources of Tasmania shows that she is bountifully endowed with great variety and abundance of mineral wealth. Her future prosperity depends more on the development of her stores of coal and metals than on the agricultural, pastoral, and timber industries. While these are not thought lightly of, it is remembered that in them our Colony has no especial advantages over her rivals, and in many respects is at a disadvantage, hence it is not to them that she will owe future eminence. Her great wealth of minerals and natural advantages as a manufacturing centre will, however, necessarily make her take a leading part not only as a producer of raw materials, but also as a maker of finished products. With large coal supplies, an excellent temperate climate, plentiful water, and large stores of tin, gold, iron, silver, and lead, her manufacturing future is assured.

NOTES by T. C. JUST, *(formerly Local Director British and Tasmanian Charcoal Iron Company, Limited), on the Iron Ore Deposits of the River Tamar District, Tasmania, and on the Manufacture of Pig Iron therefrom.*[*]

THE deposits of Iron ore to which this paper relates are those on the western side of the River Tamar, forming a series of ridges underlying to the eastward the line of hills known as the "Asbestos Range," which forms the watershed of the country between the River Tamar and Port Sorell. The principal iron-bearing country is situated upon two arms of the Tamar known as West Arm and Middle Arm, and within five miles of George Town Lighthouse, at the mouth of that river. This district was once generally known as Ilfracombe, but the name now properly applies to the township on the western shore of Middle Arm.

Very early in the history of the Colony attention was directed to these iron deposits, and Lieut.-Governor Collins forwarded a quantity of the ore to England, but what became of it is not known. Mr. Surveyor-General Evans, writing in reference to it (1822) says :—"Within a few miles of Launceston there is a most surprising abundance of iron. Literally speaking, there are entire mountains of this ore, which is so remarkably rich that it has been found to yield 70 per cent. of pure metal. These mines have not yet been worked ; the population, indeed, of the settlement will not allow this ; but there cannot be any doubt of their becoming at no very remote period a source of considerable wealth to its inhabitants." In a report of Commissioner Bigge, who was appointed many years ago to enquire into the state of agriculture and trade in New South Wales, occurs the following sentence :—"No attempt has yet been made to convert into metal the iron ore that has been found in New South Wales and Van Diemen's Land. At the distance of eight miles from Port Dalrymple, in Van Diemen's Land, considerable quantities of iron ore have been discovered upon the surface, which, upon analysis in this country (England), have been found to consist of pure protoxide of iron, similar to the black iron ore of Sweden, and furnishing a very pure and malleable metal."

In 1872 the late Mr. James Scott and myself took up, under the Mineral Regulations, 400 acres of this iron-bearing land, and formed the British and Tasmanian Charcoal Iron Company, which expended over £80,000 in the endeavour to establish a large iron factory, with what result will be presently explained. Before engaging in such expensive operations every care was taken to ascertain the true quality of the ore, as the following record of analyses will show :—"Mr. G. Foord, Government Chemist and Assayer of Melbourne, described samples of magnetic iron ore sent to him from Anderson's Creek to contain 70 per cent. of metallic iron, and said that if the ore existed in any quantity, and under circumstances otherwise favourable for economic treatment, its high percentage of iron and its freedom from all obnoxious constituents will render it of great value for iron and steel manufacture.

In 1872 Mr. Sydney Gibbons, F.C.S., the well-known analysist of Melbourne, tested six samples of brown hematite ore forwarded from this

[*] See also pp. 88-90, *ante*, for further particulars regarding the Iron Deposits of Tasmania.—ED.

locality, which ranged for metallic iron as follows :—49·50 per cent. ; 58·5 per cent. ; 59 per cent. ; 68 per cent. ; 52 per cent. ; and 69 per cent. Mr. Gibbons declared all to be remarkably fine samples of their kind, free from all features of an objectionable character, such as phosphorus, &c."

Analyses made in England were even more satisfactory. A sample tested at Lay's Chemical Works, near Stourbridge, in 1872, yielded 50·9 per cent. metallic iron. A sample tested about the same time by Messrs. Johnson and Sons, assayers to the Bank of England, H.M. Mint, &c., yielded 59·50 per cent. Mr. James W. Montgomery, F.C.S., of the Chemical Works, Whitehaven, tested a sample "of magnetic oxide of iron of excellent quality," and found it to yield 71·80 per cent. metallic iron. A further sample of ore yielded 63·79 per cent., and another sample 63·24 per cent. metallic iron. Dr. John Black, Ph. D., tested a sample of iron from Anderson's Creek in 1873, which, he estimated, would yield of pig iron 64·42 per cent., or of metallic iron 59·47 per cent., or in quantity as follows :—Pig iron, 12 cwt. 99 lbs. per ton of ore, or, in other words, 31 cwts. $5\frac{3}{4}$ lbs. of ore would be required to make a ton of pigs.

Mr. R. Carter Moffatt, Ph. C., tested two samples of ore, one of which yielded 61·74 per cent., and the other 70·72 per cent. of metallic iron. Other samples were tested with equally favourable results by Dr. Wallace, of Glasgow, and other analysts.

It is remarkable that in but one of the analyses was the mineral chromium mentioned, and then only "a trace;" while in an analysis made by Mr. Alfred H. Allen, F.C.S., the Public Analyst for North Derbyshire and Sheffield (26th January, 1877), showed chromium, none; sulphur, 0·73 per cent.

It should be noted here that soon after the British Tasmanian Charcoal Iron Company was started, Messrs. Evans, Douglas and others formed the Hematite Iron Company, to smelt iron ores on land about five miles distant. They erected a small furnace and produced some excellent pig iron, but not on a scale to be profitable. An analysis of their ores made by Mr. Woodgate in 1880 is given by Mr. Johnston in the Official Record. Out of four samples two show only traces of chromium, while two others exhibit 3 per cent. and 3·4 per cent. ; yet the analyses of iron "reduced from the Ilfracombe Ores" show chromium to the extent of 5·1 and 4·6 per cent. respectively, according to the same authority. I think there has been some confusion about the samples treated, and that the pig iron was most probably from the British and Tasmanian Company's works. As a matter of fact, the Hematite Company were taking their ore from an open cutting near the surface. The experience gained at Anderson's Creek showed that the chromium did not present itself until the mine had been considerably opened out. I fear, however, that the ores of the whole West Tamar District are more or less impregnated with chromic oxide, which renders the pig iron hard or brittle, and unmarketable, excepting for very special purposes. Nevertheless, some good iron was made.*

Towards the close of 1875 the Hematite Iron Company shipped to England 200 tons of their pig iron, which realised the very high price of £6 7*s.* 6*d.* per ton, ordinary Scotch pig being then quoted at £3 6*s.* per ton cash at the works. The iron was reported of "good quality," but the pigs very roughly cast. The analysis of this iron was as follows :—

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* The Anderson Creek deposits, containing chromium, form only a very small portion of the Iron Deposits of Tasmania, and there is no evidence of the presence of chromium in other extensive deposits, such as at Heemskirk, Mount Donaldson, Penguin, and other notable localities.—Ed.

Iron	94·40
Combined Carbon	0·96
Graphite	3·08
Silicon	0·89
Sulphur	0·22
Phosphorus	0·09
Manganese	0·24
Loss	0·12
	100·00

The magnitude of the Iron ore deposits at the Iron Hills, Anderson's Creek, (included in the British and Tasmanian Charcoal Iron Company's lease) was well tested during 1873, when three bores were put down on Mount Vulcan, 218 feet above the Creek, and 262 feet above sea level, to depths of 87 feet 6 in., 70 feet, and 49 feet 6 inches respectively. The results from the surface were as follows:—

No. 1 *Bore*:—19 feet 6 inches ironstone; 19 feet clay with iron pebbles; 10 feet 6 inches conglomerate oxide and magnetic iron; 1 foot 3 inches pure magnetite; 6 feet 9 inches green and blue clay; 1 foot 6 inches pure magnetite; 29 feet decomposed greenstone; then hard rock, believed to be ironstone. Augers broke, and bore was not continued.

No. 2 *Bore*:—19 feet ironstone; 5 feet 6 inches sand with iron pebbles; 8 feet 6 inches magnetic iron; 24 feet 6 inches decomposed greenstone; 12 feet 6 inches serpentine. Water prevented further boring.

No. 3 *Bore*:—24 feet ironstone; 6 feet 6 inches clay and iron pebbles; 3 feet 6 inches ironstone; 4 feet black sand and iron; 2 feet 6 inches ironstone; 2 feet soft ironstone; 7 feet brown hematite; in same when bore was discontinued.

Boring was afterwards continued to a depth of 179 feet, showing the same description of country, beds of serpentine rock alternating with seams iron ore. Much of the serpentine carried veins of asbestos. I have not the details of this bore, but it showed very large beds of serpentine. After the first iron ore was struck below the surface, 58 feet of serpentine; then a 5 ft. 6 in. seam of iron ore; then 52 ft. 6 in. of serpentine; and a 6 ft. 5 in. seam of magnetic iron ore. Below this, serpentine and asbestos were again encountered. The bore was discontinued, having proved all that was required for the purposes of the company. Speaking of the one hill, Mount Vulcan, Mr. Robert Scott, the Manager, reported—"By further explorations and borings I found that the quantity of hematite ore might safely be estimated at one million tons, or sufficient to produce 20,000 tons of cast iron annually for the next 25 years. On the top of this hill I bored through 20 feet of hematite, then through 30 feet of clay, and at the time I left the bore was 3 feet into magnetic iron, which latter is not included in my estimate."

I will now proceed to deal with the operations of the British and Tasmanian Charcoal Iron Company. After from £10,000 to £12,000 had been expended in preliminary works, mining, &c., the capital was enlarged to £100,000, and an extensive plant ordered from the establishment of Messrs. A. Barclay and Sons, Caledonian Foundry, Kilmarnock, and erected at Port Lempriere, on the west bank of the Tamar. The works were formally opened on 17th June, 1876, when His Excellency the Governor, Sir F. A. Weld, K.C.M.G., applied the blast to the furnace. This was a large fire-clay cupola encased in heavy plate iron. Its total height was about 76 feet, outside diameter 23 feet, greatest inside diameter 15 feet, and internal capacity

4500 cubic feet. There were four tuyers, supplied with hot or cold blast by a blast engine of 250 horse power, the air cylinder being 5 ft. 10 in. in diameter, with a stroke of 9 feet. Heating ovens, air receivers, elevators, and all necessary appliances were of the most modern design, the whole plant having specially constructed in Scotland under the supervision of the manager, Mr. R. Scott. A railway, thoroughly equipped, communicated with the mine, and there were two jetties where coal was landed and conveyed direct to a range of 40 coking ovens where it was prepared for the furnace.

The chief difficulty with which we had to deal in treating the red and brown hematite ores of Anderson's Creek was the presence, in unknown quantities, of the mineral called chromite, which contains the metal chromium. Chromite is a dark brown, almost black, crystalline mineral, found in masses in some parts of America and also in New Caledonia; but in Tasmania it is only known in association with our iron deposits, and then at some distance from the surface. The quantity present cannot be determined excepting by an analysis of the products of the furnace, and the appearance of the pig iron produced. A practised eye may distinguish, by the aid of a glass, the mineral running in fine threads through the ore, but it would be impossible to separate it before smelting, and, unfortunately, no means have yet been discovered of eliminating it in the blast furnace in the process of smelting for pig iron.

The metal chromium was discovered by Vanquelin in 1797. It was found in a rare Siberian mineral which contained lead, and was called from its colour red lead, but which is now known as chromate of lead. Chromium is a white metal with a shade of yellow, lustrous, and very infusible. It forms numerous compounds with other metals. Its specific gravity is 5·5. Heated with nitre it forms chromic acid, which is of a red colour, largely used in the arts in the production of various coloured compounds. Chromate and bichromate of potash, for instance, are much employed by calico printers, and the chromates of lead make yellow and red dyes and paints. The oxide of chrome is green, and is used for colouring porcelain and in enamel, while it is said that chromic acid gives its colour to the ruby, and that the green of the emerald is due to oxide of chrome.

It was reported to us that the presence of this chromium would be an advantage in our Tasmanian pig iron, which, it was thought, would bring it into demand for the enrichment and strengthening of steel products, especially such as were required for the manufacture of tools. The Company, therefore, sent large quantities of the iron to England, and had experiments made by the very best authorities and under the most skilled supervision.

Various opinions were expressed at the time these experiments were proceeding as to the value of chrome steel for tools. Mr. Butler, of the Kirkstall Forge Company, spent some months in America, and reported that such tools were used at the works where he was studying, but were found brittle, and laid aside. It is a fact that several chrome iron and steel companies were established in America, and tools made from American chrome steel were at one time offered as a speciality in Melbourne. The chrome there, however, was introduced in the form of chromite ore, found in the vicinity of Baltimore. It is doubtful whether the companies would have worked with an alloy like chromic pig iron.

I now give the result of English experience with the chromic pig iron:—*Mr. William Baker*, an Associate of the Royal School of Mines, London, F.C.S., &c., reported on 18th January, 1877, and referring to an analysis which had been sent to him, says:—"The description of the physical characteristics of this pig iron, viz., that it is hard and white, with large crystalline plates like spiegeleisen, does not correspond to the analysis quoted. White iron contains the carbon mostly in the combined state, and 3 per cent. of

graphite carbon should represent a grey, or at least a mottled iron approaching a softness suitable for foundry purposes. However, *a pig iron with five per cent. of chromium has not yet been known or described*, and as the ores of Tasmania are known to contain Titanium, I am inclined to believe that this is the element, and not chromium, which is present.

The amount of sulphur (0·6 per cent.) is ten times the quantity found in good hematite pig iron, whilst the amount of phosphorus is favourable, and is near the quantities found in our pig irons produced from spathic ores in Durham.

"Supposing the pig iron to contain any amount of chromium, it could only be introduced by the use of ores containing so large a quantity of chrome oxide (chrome iron ore) that the reduction must have been attended with difficulty on account of the infusibility of the slag. There would be, however, no difficulty in removing this element, either in the ordinary methods of refining in the open hearth, or in the process of puddling for malleable iron."

"There are no recorded observations on a pig iron containing even one per cent. of chromium, but alloys have been made in the laboratory which have brought out the fact pretty conclusively that chromium renders steel very hard, and above a certain quantity makes it too brittle to be of any practical value."

"The quantity of chromium which has a useful effect is about 0·6 per cent. I have known tools to be made with this amount, which were certainly superior to tools made of the best Swedish. Lately, some American firm has introduced this steel into the market, but I do not think it is an established fact that it will be a permanent article of manufacture, as I believe the steel is not likely to stand reheating on account of the tendency of the chromium to oxidise, but this may be only a question of proper treatment.

"I should say, from my knowledge of the Tasmanian ores, that, *if smelted with charcoal a superior iron could be produced by skilful management*. For the Bessemer process there should be as much as 3·5 or 4 per cent. of graphite carbon, and about as much silicon. If a pure white iron were made it could be used in the place of spiegeleisen in the melting of steel in pots by the direct process, or for making malleable cast iron. The latter process consists in casting articles, such as wheels, saddlery iron, &c., and heating them in oxide of iron, as done by Crowley & Sons of this town (Sheffield). For this purpose a good white iron is required, free from silicon. The presence of 0·5 per cent., or even a little more chromium, would enhance the value of the white iron for direct steel-making; but we have no experience of how it would behave in making malleable cast iron."

"In conclusion, I may state that any pig iron containing under ·05 of phosphorus is valuable for the Siemens-Martin process, and even to mix with very siliceous or graphitic pigs in the Bessemer process."

In February, 1877, Dr. R. Carter Moffat, of Newarthill, Motherwell, made an exhaustive chemical and spectroscopical analysis of samples of the pig iron which were forwarded to him. He described the samples as "looking very well, No. 1 particularly so. The crystals are very large and plate-like, while No. 2 crystals are small." Having completed his analysis, Dr. Moffat reported it as follows:—

	No. 1.	No. 2.
Metallic iron	89·72	97·82
Metallic chromium	9·27	1·43
Sulphur and phosphorus	traces.	traces.
Nickel, cobalt, manganese	—	none.
Tin, antimony, and molybdenum	—	traces.
Nitride of titanium, Titannic acid, Silica, Oxides of vanadium and carbon	1·01	0·75
	100·00	100·00
Specific gravity (water 1)	7·55	6·10

The great hardness of these samples is due, I believe, to the presence of chromium and titanium. The other ingredients found on analysis do not, in my opinion, exercise any specific action. The presence of vanadium, found in both specimens, is rather an unusual constituent. It is likely to be derived from the ores. Titanium, in even less than one per cent., increases the hardness and strength of the iron very much; chromium renders it very hard. Vanadium is, I understand, in great repute for wire-drawing."

(It may be mentioned that the mineral vanadium takes its name from a Scandinavian deity Venadis. The metal was discovered in 1830 by Professor Seftström, of Fahlun, in iron prepared from the iron ore of Taberg in Sweden. This mineral has also been found in a lead ore from Wanlockhead in Scotland, and in a similar mineral from Zimapan in Mexico. Vanadium is a white brittle metal closely resembling chromium.)

Dr. Moffat reported his opinion "that the chromium will not be extracted satisfactorily in the blast furnace. It may be got rid of in part by the use of fluxes put in a few hours previous to running off the metal. A mixture of soda ash and nitrate of soda, in proportions varying with the quantity of chromium and metal in the furnace thrown in, say one hour before tapping the molten pig, may have the effect of oxidising the chromium, in which case the remaining slag will be coloured yellow. The titanium will not, I feel sure, be removed to any great extent.

Very great attention was given to our Tasmanian chromic pig iron by Mr. Edward Riley, who had a laboratory and assay offices at No. 2, City Road, London, and at 14A, Finsbury-square, and was considered one of the best authorities on iron in England. Early in February, 1877, Mr. Riley forwarded an analysis of two samples of pig iron, as follows:—

	No. 1.	No. 2.
Carbon	4·200	3·270
Silicium	·976	·124
Sulphur	·207	·562
Phosphorus	·055	·054
Iron	88·343	91·362
Chromium	6·287	4·143
Manganese	Nil.	Nil.
Copper	Traces.	Traces.
	100·068	99·515

Sample No. 1 was described as white pig iron, with bright silvery crystalline structure, somewhat similar in appearance to spiegeleisen, and by any practical man would be considered the same. Sample No. 2 was white iron with a dull white fracture—what I should call dirty white iron. Judging wholly from its appearance, one would form a favourable impression as to the quality of No. 1 pig, and an unfavourable impression as to No. 2.

Uses as Pig-iron.—As to the effect chrominm has on pig-iron, we have no very definite and conclusive information. Pig-iron containing chromium has been used in the United States for making very hard castings. For this purpose the pig must necessarily be grey, and any application of your iron in this direction would bear a mixture. I cannot help thinking an application to a limited extent may be found for making hard castings, and probably chilled castings.

Uses as Wrought-iron.—As to the results of puddling chromium pig (white pig is specially adapted for puddling), I must admit I am unable to give you a very definite opinion. My impression is that the bulk of the chromium will be puddled out—still some will probably be retained, and this, in conjunction with the high percentage of carbon, will, in my judgment, make a hard rigid iron with a high tensile strain. Should this be combined with toughness (a very necessary requisite) it may prove to be valuable for special purposes.

Application for making Steel.—The appearance and character of the No. 1 pig would naturally suggest its use for the manufacture of steel. Unfortunately, the percentage of sulphur is rather high. I am inclined to think the sulphur may to some extent be eliminated, or so modified that some very good chromium tool-steel may be made by an admixture with your pig. Chromium steel has been introduced into this country from America, and the report I had of a tool used in a coal-cutting machine was very satisfactory. The steel I found on examination to contain a very notable amount of chromium. It is asserted by some American patentees that chromium plays the part of carbon, and that chromium steel contains no carbon. This is not correct ; still I think chromium may play an important part in tool-steel. Experiments are now being carried out at Sheffield.

As to use in the manufacture of Bessemer Steel.—It has been asserted that an alloy of chromium has the same effect as spiegeleisen in the Bessemer process, and it has been called Chromeisen. As to the success of this application I have no definite information. Looking at the composition of your pig I fear the sulphur would be an objection, and it is very doubtful if chromium would have the effect of modifying the sulphur, as manganese does. It is possible, however, that a mixture of chromium pig might be used with spiegelessia or ferro-manganese, as a mixture with other pig-iron when in the converter. Its application (except in special cases) in this direction will, I think, be as much due to the high percentage of carbon as to the chromium. This may all blow out : should it not do so, then possibly a little chromium in the steel might make it adapted for the manufacture of rails, giving the rails hardness, with a low percentage of carbon. This will, however, depend on the chromium not interfering with the toughness of the metal, or making it liable to break by impact."

Mr. Riley does not in this communication suggest the possibility of getting rid of the chromium, considering it desirable first to ascertain whether it "may not be a positive advantage." He says, "it is possible the presence of chromium in the ore may prevent the production of grey pig, or at any rate may make the manufacture difficult." . . . "As your iron is quite a new material it will be requisite to try some very careful practical experiments with it under scientific guidance."

In a communication, dated March 13th, 1877, Mr. Riley criticised the report of Dr. Moffat as "written by a chemical enthusiast," and says, "he is in error as to the titanium, the substance he has mistaken for it being chromium;" and states that even if he did discover the minerals named, "they have not the slightest practical bearing on the question."

He says, further, "The Titanic Iron and Steel Company was an utter failure, and was wound up, and although I have, for clients of mine, for years endeavoured to introduce and use titaniferous iron ores, I have utterly failed to do so." . . . "I can tell you as a fact, from my own personal knowledge, that from £250,000 to £350,000 have been sunk in titanic iron ores in Norway and Canada from which there is no return whatever.

"Some experiments were made with your pig iron at Sheffield by Mr. William Cook. He mixed it with ordinary foundry iron, and made castings with it for machinery. For this purpose it was not in my opinion at all adapted, and the result was precisely as one would anticipate—a weak casting. White pig iron such as yours could only be used for hardening pig iron or making chilled castings."

The experiments made were not very satisfactory. "I saw a bloom that, I was informed, was made by puddling a mixture of half chromium pig and half hematite pig; the bloom was not welded, and could not be worked."

"I should observe that the chromium pig melts with difficulty, and remains unmelted after the iron used as a mixture is fluid. This hardly gives the chromium pig fair play. It should be melted with other pig in a refinery, and then puddled after having been made into metal.

"Four heats in four furnaces were puddled whilst I was at Messrs. Cook's works, one ninth of chromium pig being used as a mixture with hematite pig and pig made at the works. The chromium pig was charged first so as to give it more time to melt. Soon after melting, and before the boil, samples of the cinder were taken. These were found to contain chromium.

"The puddled bar was rolled, cut up, and made into No. 2 iron. The bar contained a very decided amount of chromium. The above experiments prove that some of the chromium leaves the pig, but a certain amount remains even in the finished bar iron.

"There was no marked improvement in the quality of the iron, and the chromium pig retarded the puddling process, the heat requiring rather more work."

Mr. Riley made a number of experiments with a view to reducing the percentage of sulphur in the pig iron. Of these he says:—"In melting your pig (the same sample as that analysed) with 10 per cent. of ferro-manganese, containing 73 per cent. of metallic manganese, the sulphur was reduced from ·207 per cent. to ·035 per cent. This amount would not, in my opinion, be of much moment in the manufacture of the best qualities of steel." In another experiment, using spiegeleisen instead of ferro-manganese, the sulphur was reduced from ·10 per cent. to ·075 per cent.

Respecting a small experiment made at Messrs. Henry Bessemer's works at Sheffield, Mr. Riley reported:—

"To make experiments in a 5-ton Bessemer converter was evidently too costly, as the whole of the steel might be spoilt. Some Bessemer metal, after the blow and before adding the spiegeleisen, was run out of the converter into ingots. Forty pounds of this metal was melted with 4 lbs. of your pig in a steel pot and cast into a 3-inch ingot. The ingot was too soft to break with a sledge. When broken under the steam-hammer it had one or two blow-holes all through it. A piece of the ingot when heated to redness crumbled to pieces under the touch of the hammer. I examined this metal and found it

contained only ·27 per cent. of carbon, thus showing both mechanically and chemically it was soft steel.

"A second experiment was made on 30 lbs. of blown metal, same as before, and 1½ lbs. of chrome pig. When the mixture was melted, on running into an ingot it rose a good deal. The ingot, when broken under the steam-hammer, was spongy, and when heated to a red heat and touched with the hammer it went all to pieces."

From these experiments it was considered that chrome pig would not play the part of spiegeleisen in the manufacture of steel.

Mr. Riley examined three samples of ores from which the pig iron dealt with was made.

No. 1 was hard and dark red in colour (with occasionally crystalline structure similar to micaceous iron ore, and slightly magnetic). This, on analysis, was found to contain only traces of chromium. He was of opinion that if calcined this ore should smelt well—should make grey pig, and pig, for all practical purposes, free from chromium.

No. 2.—Brownish red ore, more open in structure, with dark blackish and brown fracture, contained a very appreciable amount of chromium.

No. 3.—Small clayey red ore, similar in appearance to red hematite, contained even more chromium than No. 2.

On the 15th March, 1877, Mr. Riley read a paper on Tasmanian Chrome Iron before the Chemical Society at Burlington House, Piccadilly. In this he detailed the experiments already narrated, and said, "The Americans have made some important experiments on chrome in steel, and he had seen many fine samples of these, although the effect of chrome on steel is not very distinctly known. . . . One very peculiar feature in the Tasmanian iron is that such a large percentage of sulphur should exist with the quantity of carbon in the iron. The carbon is 4·200 per cent., and the sulphur ·207, and this rather puzzled him to account for, as the carbon under ordinary circumstances should drive out the sulphur. . . . Here we have an alloy of chrome and iron, and I can't help thinking that we shall yet find some practical application for it."

The Chairman (Professor Abel, of Woolwich Arsenal,) remarked that the pig was shown to be in possession of very peculiar properties, and, regarding the effect of chrome on steel, thought that, as in the formation of some other compounds, the chrome might pass into the steel and produce hardening effects, although then it might no longer be distinguishable as chrome.

Mr. Riley observed that one use of the pig in America was to make very hard pig-iron, and was of opinion that it might be serviceable for chilled shot purposes.

Professor Abel said that as a very low class of pig would serve to make chilled shot, an expensive iron was not required.

The conclusions arrived at by the Chemical Society, after discussion, were—

(1.) That the chrome pig-iron would not supply the place of spiegeleisen.
(2.) That the sulphur in the iron could be easily reduced.
(3.) That an inferior iron being quite good enough for chilled shot, it would not come in there.
(4.) That something might be done in the direction of its application to the manufacture of steel.

At the annual meeting of the Iron and Steel Institute held in London in March, 1877, Mr. E. Riley introduced the subject of the chromium pig iron made by the British and Tasmanian Iron Company. He repeated much of the information above given, and said, "The above Company have recently

commenced smelting pig iron, on a convenient site for shipment, on the coast of Tasmania. Some difficulty has been experienced in producing grey iron, the general character of the iron smelted being very similar to spiegeleisen, some having a fracture consisting of two interlaced-shaped crystals, the colour silvery white. The analysis, which he detailed, showed 6·287, 6·55, and 7·050 per cent. of chromium. This was a metal that hitherto has been only found as mere traces in pig iron. Various reports have been received from America as to chromium pig iron being used when any hard castings are required. Also chromium steel has been manufactured by the Chromium Steel Company, Brooklyn, and has been spoken very highly of. Samples sent to this country, on examination, were found to contain a little chromium; others assert that no chromium is present in the steel. The railway bridge across the Mississippi, at St. Louis, is stated to be built with chromium steel. Our information as to the effect of chromium on either iron or steel is very meagre, and the information I can supply is not very positive in its character. Experiments have been made in puddling 14 pig. A mixture of half chromium pig and half hematite puddled with difficulty (this might be anticipated from the high percentage of carbon), requiring much time. The ball from the mixture would not weld on account of a thick cinder, and could not be made into a bloom. The cinder, however, from this heat seemed to affect the quality of the iron in the next heat, where an ordinary mixture of good grey forge-pig was used. . . . Chromium steel is now being manufactured at Sheffield, and an alloy of chromium and iron, called by some, chromeisen, is being sold to mix with steel so as to add a certain amount of chromium to it. It is asserted by Mr. Julius Baur, the patentee for chromium steel, that chromium plays the part of carbon, and may be used to harden the steel in its place, having the advantage of not being burnt out by heating like carbon. He also claims for it the specialities of easily welding either to itself or to iron. I must say that our experience is so small that I can offer no opinion as to the properties claimed for it; should they prove, on further trial, to be correct, then it seems to me that the Tasmanian pig iron will become a most useful source for the metal chromium. The sulphur in our analyses given is a little high, namely, ·207 per cent.: this I have found can be readily reduced by melting the pig with ferro-manganese. An experiment made by melting with 10 per cent. of ferro-manganese reduced the sulphur ·035 per cent. Mr. S. Kerr states that an alloy of chromium and iron can be used in the place of spiegeleisen. Experiments made with metal from the Bessemer converts before adding spiegel, and the chromium pig iron melted in steel pots, showed that the chromium has none of the properties of manganese, the ingots made from the mixture when heated to a red heat crumbled under the hammer. A sample of alloy called chromeisen sent to me from Sheffield, and now being sold for adding to steel, I found to contain only 7 per cent. of chromium, although asserted to contain from 20 to 25 per cent of this metal, and to contain also a very considerable amount of sulphur. In conclusion, I think the metal chromium deserves a fair trial, and the Tasmanian pig, which can be supplied in quantity, is a most ready and cheap source for the metal."

"Mr. Allen (Sheffield) was very much pleased to hear how sulphur could be extracted by the aid of ferro-manganese. He had suggested the use of the manganese ore with this chromium ore, and he would like to know whether the puddled iron retained the chromium?"

"Mr. Riley said he had already stated as much."

"Dr. Percy said he wished to draw attention to the fact that two years ago they examined some very fine Russian sheets of iron, and these contained 0·2 per cent. of chromium. This component had the extraordinary property of giving to iron intense hardness, but beyond a certain quantity, it made the

metal brittle. The other day a gentleman from the United States told him that he had had no difficulty in tempering the steel, and he had come to the conclusion that for its own particular purpose this metal was unequalled."

The exhibition of specimens of our chromium pig iron at the meeting of the Iron and Steel Institute referred to brought it very prominently before the trade. Representatives from Belgium, France, Germany, and America were present, and Messrs. M'Ewan and Co. wrote—"Everyone was quite astonished at the beautiful appearance of it. Dr. Percy himself, the greatest authority in England, wondered at first what could give iron such a splendid appearance. Up till this moment nothing but congratulations on the appearance of the iron has reached us, but we are sorry to say the experiments have not been satisfactory."

Messrs. Sir John Brown and Co., of Sheffield, were (in 1877) engaged in experimenting with chromium steel, being interested in several American patents. Their operations were conducted privately, all that was known being that it was asserted chromium increased the tensile strength of steel. The firm were very reticent. Samples of Tasmanian pig iron were forwarded to them, and Mr. Ellis, the manager, reported that he did not see how they could use it in the manufacture of chrome steel. Subsequently they wrote to M'Ewan and Co.: "It is possible we might bring it into the manufacture of iron, and shall therefore be glad to know at what price you can supply it."

Messrs. William Cook & Co., of Sheffield, reported on some of their experiments on 26th February, 1877—"Mr. Cook had 12 pieces of machinery made of iron containing one-seventh of chrome pig. These pieces were broken in less than one day's work: the lot should have lasted 28 days. Mr. Cook thinks it is even more dangerous for castings than in malleable iron."

The same firm, in a lengthy report dated 12th March, 1877, say: "The chrome iron cannot be worked by itself so as to produce malleable iron. The metal it yields, when subjected to the operation of puddling, appears to be entirely destitute of the property of welding, and consequently can neither be hammered nor rolled. A mixture was made containing one-ninth of chrome iron, the other metal being of good average quality. On working this charge in the puddling furnace, it was found that chrome exercised a very powerful influence in retarding the fining of the iron, and also largely increased the percentage of waste. The resulting iron rolled into bars very fairly, but when drawn into wire it was found to be very defective, owing to the imperfect manner in which the particles of metal had welded together. Castings containing one-seventh of chrome were rendered considerably harder, but at the same time were so exceedingly brittle as to be utterly unsuitable for machine work. The various experiments we have made have tended to show that chrome iron is not only of no value by itself, but even exerts a very detrimental influence upon otherwise good iron.

Messrs. William Siemens & Co. were solicited to interest themselves in the chrome iron, but for a considerable time they refused. Ultimately, they purchased 50 tons of the iron which was delivered from the last shipment, but I never heard the result of any experiments made with it.

Mr. R. F. Mushet, of Cheltenham, the great English authority on steel, and one who had a great deal to do with the establishment of the Bessemer process, reported on the Tasmanian ores thus, under date 8th March, 1877:—"I have received the analysis of Tasmanian ores. These ores are generally very good, and that described by Messrs. Baird No. 1 is a magnificent ore, and if pure in bulk would be most valuable for direct steel making. Grey iron made from these ores generally would be suitable for the Bessemer process. I much regret that the iron is white in place of grey, and that it has been smelted with coke in place of charcoal, as I hoped it might have

been. * * * The presence of 6·287 of chromium, if really in the iron, is likely to confer value upon the metal beyond that of ordinary pig iron. But the *ores* do not show the presence of chrome oxide in quantity sufficient to account for more than, at most, one-sixth of the percentage found by Mr. Riley; and Mr. Riley, on the other hand, may have been in error. As to the ores being quite free from titanic acid that is unquestionably an error; but the analysists have mistaken this acid for a portion of the silicic acid present in all the ores. This is a common mistake."

Messrs. Charles Cammell & Co., of Sheffield, had a small lot of the chromium pig iron for the purpose of experiments, but never reported very fully as to results. In a letter to Messrs. M'Ewan & Co. they said: "We endeavoured not to produce a steel by substituting chromium for carbon, but simply to improve the carbon steel by the introduction of a small quantity of chromium, which we were given to understand was of great efficacy. So far as we went with the experiments we noticed no decided improvement."

Messrs. Neilson Bros., Mossend Ironworks, under date 14th March, 1877, report:—"The assay shows a high percentage of chrome, and is very high in sulphur, which, you will find, it is difficult to reduce. For making steel such a quantity is fatal. The phosphorus is also high." * * * On 29th March the same writer reported:—"I am sorry to say the account of the Tasmanian pig is not favourable when wrought by itself. It is almost impossible to work it alone without mixing it with flux, cinder, or hammer slag. We charged it alone, but could not get it to work. After melting the cinder was like glass, but after adding good clean slag it wrought better. The puddled bar that was made from it is very black in colour and loose in the fibre. I think it would make a very good mixture with North of England pig, but will not do by itself for puddling. If you could reduce the sulphur it would be very much improved."

A trial of the iron was made by the Patent Shaft and Axletree Company, Wednesbury, the manager of which reported on 15th March, 1877:—"We have not had time to try it in any other way but puddling, and it does not answer well in this, being of such a dry nature that the bar was not sound at all, though the portions were considerably tough and fibrous. Possibly with a suitable mixture it might yield far different results in this respect. Puddled alone the yield was below that of other good irons."

Under date 11th April, 1877, the Manager of the Steel Company of Scotland, Newton, wrote respecting a trial under the Martin-Siemens process. "I used 25 cwt. of hematite and 5 cwt. of chromium pig and worked it with ore. Supposing all the chromium to have gone into the steel there would have been 1·1 per cent.; but I find 0·219 per cent. chromium, 0·048 per cent. sulphur, 0·490 per cent. manganese, and 0·45 carbon; so it is evident the chromium oxidises to a considerable extent, though not so readily as manganese. Adding the chromium pig at the end, I could regulate the amount put into the steel; but I wished to ascertain its rate of oxidisation in the bath. One of the ingots (I only had two) was rolled into rails last night. The rails appeared very good, but harder than usual, with a steel of 0·45 carbon. There have been no mechanical tests made of it yet. If we were making rail steel we could only use a portion of this pig in a charge, about one-sixth, and we could only add that to hematite pig. If we were making steel from more impure irons (viz. ¼ Scotch) so that the steel contained 0·25 or so of phosphorus, I scarcely think we could then use chromium pig. I am inclined to try making tool steel with it." In a postscript the manager says: "I have just seen one of the chromium rails punched; it seems pretty tough, and is altogether a very good solid-looking rail."

Messrs. Ward & Payne, of Sheffield, under date 12th April, 1877, give

the result of trials with Tasmanian pig iron and ferro-manganese for steel for the manufacture of tools.

No. 1 *Ingot.*

36 lbs. Swedish iron.
9 lbs. chromium pig.

Produce.—A steel that looks well; works fairly in forging. Its hardening and edge-enduring properties not sufficiently ascertained.

No. 2.—*A blank.*

40 lbs. chromium pig.
4 lbs. ferro-manganese.

Product.—Worthless.

No. 3 *Ingot.*

40 lbs. Swedish iron.
4 lbs. pig.
2 lbs. ferro-manganese.

This is a very tough ingot, very difficult to break.

Article tried, Chisel for Stone.—Hardened at a low heat and tempered blue. Made an edge that would cut the hardest stone—granite.

Joiners' Firmer Chisels.—Cuts wood fairly well in a short trial. Should doubt its enduring quality. It would want sharpening much oftener than our best steel chisels.

Hammers.—Did not stand the hardening; cracked; face came off; too hard for these goods.

No. 4 *Ingot.*

42 lbs. Swedish iron.
6 lbs. pig.
2½ lbs. ferro-manganese.

This produces when hammered and rolled a very fine-grained beautiful-looking steel.

Tried it for—

Joiners' Firmer Chisels.—Found too hard when tempered very low. Stood the edge just fairly, but doubtful.

Files.—Too hard again; the teeth stripped off in filing cast steel. Would have filed iron well enough.

Engineers' Chipping Chisel.—Would not stand this test at all. Too brittle.

Turning Tools.—Does not seem adapted for this use. Wants more tenacity, although, when cold, it breaks tough, and, under the hammer, works soft.

Mr. Spencer, of Newcastle, also reported having made some fine tool steel from Tasmanian iron, but I never saw the details.

I had some tools made from the cast iron which were exhibited at the Sydney Metropolitan Exhibition in 1877, and attracted a good deal of attention. They showed the hard and tough qualities of the iron only.

Other trials of the iron were made at several works, from some of which the reports were meagre and unsatisfactory, others confirming what has already been shown.

Mr. J. Fowler and Co., of Leeds, tried it for cast malleable castings.

Mr. William Menelaus, Dowlais Iron Works; *Messrs. James Watt and Co.*; *Messrs. Crowly and Sons*; *Messrs. Vickers and Co.*; *Messrs. Brown, Baily, & Dixon*; and the *Chillingworth Company,* all received the iron and experimented with it, but without more satisfactory results than already shown.

The opinion was pretty freely expressed in England, as well as in the Colonies, that the Company ought to be able to make grey pig iron from selected ores, if great care was taken as regarded the fluxes, coke, lime, &c. used, and many who profess to be authorities declare that it could be done now. Need I say that before admitting a failure we exhausted every known possible means of manipulation. Mr. Robert Scott, the manager, was an old experienced iron works manager in Scotland, and was largely interested in the success of the enterprise. Whilst the furnace was in blast I spent weeks with him at the works, and discussed with him night and day the experiments which were put in operation. We had a skilled analytical chemist there for some time, carefully examining what went into the furnace and what came out of it. The closest supervision was given, and details watched most minutely, but we never could get the iron sufficiently grey or soft, nor could we secure uniformity or quality. A great deal of iron was made equal to the best Scotch pig, but this would represent but a small proportion of a tapping, the bulk being white, crystalline, and hard. The ores for the furnace were carefully selected, and charged both raw and calcined; the quality of the limestone was watched narrowly, as also other fluxes which were tried. The fuel used was chiefly coal from Bulli Bulli, New South Wales, which was carefully coked on the works, and the coke seemed of very excellent quality—at least experts declared it could not be better. I should mention that Bulli Bulli coal was decided on after exhausted trials of the coal from the Newcastle mines, none of which produced anything like as good coke. Operations were not confined to smelting with coke. Charcoal made from the native wood growing around was tried on several occasions, also mixtures of fuel, but all to no purpose—the product remained hard and unmarketable in quantities such as were produced.

I should mention here that as an alloy the pig iron was found very valuable in the colonies for particular purposes, and the foundry masters would have become regular customers for small quantities for mixing with other irons. In the production of such articles as stamper-heads, and false bottoms for quartz mills, or anything where extra hardness is required, the chromium pig was found excellent when used in the correct proportion with ordinary pig iron; but, of course, a demand of this kind would have been quite insufficient to dispose of the output of a furnace such as ours.

Reluctantly, and with bitter disappointment, we had to declare ourselves beaten in the endeavour to make saleable pig iron out of the iron ores of the Ilfracombe District, and the splendid plant had to be broken up and sold. The large circular water tanks seen along the Main Line Railway were once the shell of the first great blast furnace erected in Tasmania, and the iron columns on which they are supported once formed the elevator by which the ores and other materials were hoisted to the tunnel-head or mouth of the furnace. "'Tis an ill wind that blows nobody good,"—and Mr. Grant got a great bargain in those materials.

I have often regretted that before operations were stopped I did not have an opportunity of testing the quality of the dense masses of specular iron ore found at Penguin Creek and in the neighbourhood of the Rivers Blythe and Gawler. I had an idea that if these were mixed with the Ilfracombe ores a marketable product might be the result. I was anxious that this should be tried, and Mr. Scott approved of the proposal, but after what had happened we did not feel inclined to depend upon laboratory trials only. The cost of mining a quantity of the ore and conveying it round to the works would have been considerable, and as the finances were exhausted the idea had to be abandoned. I commend it to anyone who may in the future feel inclined to tackle the Iron Industry in Tasmania.

Tariff of Tasmania.

THE names of articles imported and exported are arranged in the general statistical tables—published in a separate volume—as nearly as possible in accordance with a natural system of classification recommended by the Intercolonial Statistical Conference held in Tasmania in January, 1875.

Formerly articles were arranged alphabetically in these tables without regard to natural alliance. In the classification there adopted alphabetical order is made subordinate to the natural relationship of the various articles, as indicated by the following abstract :—

CLASSIFICATION OF ENTRIES OF ARTICLES IMPORTED AND EXPORTED.

CLASS I.—ART AND MECHANIC PRODUCTIONS (SPECIFIC) OTHER THAN TEXTILE FABRICS AND DRESS.

Order 1. Books, &c.
„ 2. Musical instruments.
„ 3. Prints, pictures, &c.
„ 4. Carving, figures, &c.
„ 5. Tackle for sports and games.
„ 6. Watches, philosophical instruments, &c.
„ 7. Surgical instruments.
„ 8. Arms, ammunition, &c.
„ 9. Machines, tools, implements, &c.
„ 10. Carriages, harness, &c.
„ 11. Ships and boats and matters connected therewith.
„ 12. Building materials.
„ 13. Furniture.
„ 14. Chemicals.

CLASS II.—TEXTILE FABRICS AND DRESS.

Order 15. Wool and worsted manufactures.
„ 16. Silk manufactures.
„ 17. Cotton and flax manufactures.
„ 18. Manufactures of mixed materials.
„ 19. Dress.
„ 20. Manufactures of fibrous materials.

CLASS III.—FOOD, DRINKS, &c.

Order 21. Animal food.
„ 22. Vegetable food.
„ 23. Drinks and stimulants.

CLASS IV.—ANIMAL AND VEGETABLE SUBSTANCES.*

Order 24. Animal substances.
„ 25. Vegetable substances.
„ 26. Oils.†

CLASS V.—MINERALS AND METALS.

Order 27. Articles connected with mining.
„ 28. Coal, &c.
„ 29. Stone, clay, earthenware, and glass.
„ 30. Water.
„ 31. Gold, silver, specie, and precious stones.
„ 32. Metals other than gold and silver not included in Class I.*

CLASS VI.—LIVE ANIMALS AND PLANTS.

Order 33. Animals and Birds.
„ 34. Plants.

CLASS VII.—MISCELLANEOUS MATTERS.

Order 35. Miscellaneous articles of trade, &c.
„ 36. Indefinite articles.

* Only raw materials or substances, undetermined as regards final specific use, classed within this division. † Mineral oils included.

As the various Orders are numbered consecutively in general tables published separately, the position of any article will be readily found by means of the following Index :—

ALPHABETICAL INDEX TO TARIFF ON IMPORTS.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
1	Account books, 12½ per cent. *a.v.*
14	Acids, carbolic, citric, muriatic, sulphuric, exempt.
14	Acid, tartaric, 4*d.* lb.
9	Agricultural and horticultural machinery and implements, not otherwise enumerated, exempt.
25	Agricultural seeds, 12½ per cent.
23	Ale, beer, and porter of all kinds, in wood, 9*d.* per gallon.
23	Ditto, in bottle, 1*s.* 3*d.* per gallon, 6 reputed quarts or 1 doz. reputed pints to be taken as a gallon.
23	Aerated and mineral waters, 12½ per cent.
22	Almonds, 2*d.* lb.
14	Alum, exempt.
20	American leather cloth, exempt.
9	Anvils, exempt.
11	Anchors, ships', 12½ per cent. *a.v.*
33	Animals, living, Cattle and Sheep excepted, of every description, exempt.
19	Apparel, all kinds, 12½ per cent. *a.v.*
14	Apothecary's wares, 12½ per cent. *a.v.*
12	Architraves of wood, 20 per cent. *a.v.*
10	Arms, carriage, exempt.
32	Antimony, in ingots, exempt.
22	Arrowroot, 2*d.* lb.
14	Arsenic, crude, exempt.
3	Art, works of, (except for public institutions), 12½ per cent. *a.v.*
9	Axe handles, 10 per cent. *a.v.*
10	Axles, carriage, exempt.
3	Atlases, exempt.
21	Bacon, 2*d.* lb.
20	Bags, flour, corn, & bran, exempt.
20	Bags, ore, exempt.
20	Bags, gunny, free.
20	Bags, wool, 4*d.* each.
20	Bags, manufactured from hemp, jute, or cotton, 12½ per cent. *a.v.*
20	Bagging, manufactured, hemp, jute, and grey calicoes, 12½ per cent. *a.v.*
25	Bags, paper, without printing thereon, 12½ per cent. *a.v.*
20	Bags, empty (see Packages), exempt.
20	Bags, bran, exempt.
19	Baggage, passengers', except musical instruments and plate, if landed within six months before or after arrival of owner, exempt.
36	Ballast, exempt.
25	Bark, 12½ per cent. *a.v.*
22	Barley, patent, 12½ per cent. *a.v.*
22	Barley, pearl, ½*d.* lb.
22	Barley, Scotch, ½*d.* lb.
22	Barley, 10*d.* 100 lbs.
9	Basketware, lined or unlined, 12½ per cent. *a.v.*
25	Bass, exempt.
29	Bath bricks, 12½ per cent. *a.v.*
13	Bath chairs, 12½ per cent. *a.v.*
22	Beans, 10*d.* 100 lbs.
21	Beef, 1*s.* 6*d.* 100 lbs. gross.
9	Bellows, blacksmiths', exempt.
2	Bells, specially imported for churches or chapels, exempt.
11	Binnacle lamps, ships', 12½ per cent. *a.v.*
22	Biscuits, fancy, 2*d.* lb.
22	Biscuits, plain, 1*d.* lb.
14	Blacking, 12½ per cent. *a.v.*
25	Black Oil, exempt.
15	Blankets, 12½ per cent. *a.v.*
13	Blinds, Venetian, 12½ percent. *a.v.*
25	Blue, 2*d.* lb.
14	Bluestone, exempt.
1	Board, mill, straw, and paste, exempt.
12	Boards, planed, tongued, and grooved, 5*s.* 100 super. feet.
11	Boats, boat oars, 12½ per cent. *a.v.*
9	Boilers, cast iron, 12½ per cent. *a.v.*
9	Boiler Plates, and raw material, including boiler mountings used in boiler making, not including bolts and screws, exempt.
32	Bolts, copper and yellow metal, exempt.
14	Bones, bone dust, exempt.
1	Books, printed, exempt.
1	Bookbinding cloth and leather, exempt.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
19	Boots, shoes, and goloshes, 12½ per cent. *a.v.*
22	Bottled fruits, 3*d.* lb.
29	Bottles, quarter-pint and under, 12½ per cent. *a.v.*
29	Bottles, fancy, and decanters, 12½ per cent. *a.v.*
29	Bottles, not being fancy bottles or decanters, and being over one quarter-pint imperial measure, exempt.
35	Boxes, empty (see Packages), exempt.
10	Boxes, carriage, exempt.
11	Blocks, ships', 12½ per cent. *a.v.*
25	Bran, 10*d.* 100 lbs.
23	Brandy, 15*s.* gallon, no allowance for under-proof.
32	Brass, sheet and rolled, exempt.
9	Brassware, 12½ per cent. *a.v.*
29	Bricks, bath, 12½ per cent. *a.v.*
12	Bricks, building, 12½ per cent. *a.v.*
12	Bricks, fire, 12½ per cent. *a.v.*
12	Bridges, iron, 12½ per cent. *a.v.*
24	Bristles, unmanufactured, exempt
9	Brooms, hair and other, 12½ per cent. *a.v.*
9	Broom handles, 12½ per cent. *a.v.*
9	Brushes, 12½ per cent. *a.v.*
9	Buckets, 3*d.* each.
25	Bulbs, exempt.
31	Bullion, exempt.
21	Butter, 2*d.* lb.
13	Cabin furniture (see Passengers' Baggage).
13	Cabinet-makers' & upholsterers' materials, exempt.
2	Cabinet organs, 12½ per cent. *a.v.*
2	Cabinet organs, for churches and chapels, exempt.
9	Cabinet sewing machines, exempt.
11	Cables, chain, 12½ per cent. *a.v.*
13	Camp ovens, 12½ per cent. *a.v.*
22	Canary seed, ½*d.* lb.
22	Candied, bottled, and canned fruits and peels, 3*d.* lb.
24	Candles, 2*d.* lb.
17	Candle cotton, exempt.
25	Cane, exempt.
11	Canvas for sails, 12½ per cent. *a.v.*
23	Capers, 12½ per cent. *a.v.*
19	Caps, 12½ per cent. *a.v.*
14	Carbolate of lime, exempt.
14	Carbolic powder, exempt.
14	Carbonate of soda, 1*d.* lb.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
1	Cards, playing, 12½ per cent. *a.v.*
1	Cardboard, uncut, exempt.
23	Carraway seeds, 12½ per cent. *a.v.*
10	Carriages, 2 wheels and springs, intended to be drawn by cattle on ordinary roads, £6 each.
10	Carriages on 4 wheels, £12 each.
10	Carriage shafts, spokes, naves, felloes, or poles, exempt.
15	Carpets and carpeting of every description, 12½ per cent. *a.v.*
10	Carriage axles, arms, and boxes, exempt.
8	Cartridges, 12½ per cent. *a.v.*
35	Cases, casks, empty (see Packages), exempt.
35	Casks, 12½ per cent. *a.v.*
32	Castings, rough iron, 1*s.* 6*d.* cwt. gross.
33	Cattle, 30*s.* per head.
12	Cements, mineral, 9*d.* cwt.
9	Chaff-cutters, 12½ per cent. *a.v.*
29	Chalk, exempt.
13	Chandeliers, 12½ per cent. *a.v.*
3	Charts and maps, exempt.
11	Chain cables, 12½ per cent. *a.v.*
21	Cheese, 2*d.* lb.
14	Chemicals, 12½ per cent. *a.v.*
23	Chicory, 4*d.* lb.
29	Chimney pots, earthenware, 12½ per cent.
29	Chinaware, 12½ per cent. *a.v.*
23	Chocolate, 3*d.* lb.
14	Chloralum, exempt.
14	Chloride of lime, exempt.
23	Cider, in wood, 1*s.* 3*d.* per gallon.
23	Cider, in bottle, 1*s.* 6*d.* per gallon.
23	Cigars and cigarettes, 6*s.* lb.
23	Cinnamon, 4*d.* lb.
29	Clay, fire, lumps, unmanufactured, exempt.
29	Clay, pipe, unmanufactured, exempt.
6	Clocks, all descriptions, 12½ per cent. *a.v.*
6	Clocks, specially imported for churches and chapels, exempt.
15-19	Cloth, not otherwise enumerated, 12½ per cent. *a.v.*
23	Cloves, 4*d.* lb.
28	Coals, 1*s.* ton.
28	Coals, Railways, exempt.
23	Cocoa, 3*d.* lb.
25	Cocoa fibre, exempt.
22	Cocoanuts, exempt.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
25	Cocoanut oil, exempt.
23	Coffee (green), 3*d.* lb.
23	Coffee (roasted or ground), 4*d.* lb.
31	Coin, exempt.
20	Coir matting, 12½ per cent. *a.v.*
20	Coir, yarn, and unmanufactured, exempt.
28	Coke, 1*s.* ton.
9	Combs, 12½ per cent. *a.v.*
11	Compasses, ships', 12½ per cent.
22	Confectionery, 2*d.* per lb.
22	Confectionery, Ornaments for, 12½ per cent. *a.v.*
14	Copperas, exempt.
32	Copperware, 12½ per cent. *a.v.*
11	Copper or yellow metal rods, bolts, or sheathing, and nails, exempt.
32	Copper, plates or sheets, exempt.
25	Corks, and cork unmanufactured, exempt.
20	Cordage, exempt.
23	Cordials (see Spirits), 15*s.* gallon.
22	Corn flour, 1*d.* lb.
20	Corn bags, exempt.
25	Cotton, raw, waste, wick, and candle, exempt.
17	Cotton, manufactures of, 12½ per cent. *a.v.*
17	Cotton rugs, 12½ per cent. *a.v.*
14	Cream of tartar, 12½ per cent. *a.v.*
5	Cricketing materials, 12½ per cent. *a.v.*
29	Crockeryware, 12½ per cent. *a.v.*
9	Crucibles, 12½ per cent. *a.v.*
9	Cutlery, 12½ per cent. *a.v.*
11	Dead-eyes and rings for shipping, 12½ per cent. *a.v.*
9	Diamonds, glazing, 10 per cent.
11	Deadlights for shipping, 12½ per cent. *a.v.*
33	Dogs, exempt.
12	Doors made of wood, 20 per cent. *a.v.*
29	Draining pipes and tiles, 12½ per cent. *a.v.*
15-19	Drapery, 12½ per cent. *a.v.*
14	Drugs and druggists' wares, 12½ per cent. *a.v.*
14	Dyewood and dyestuffs, for manufacturing purposes only, exempt.
29	Earthenware, 12½ per cent. *a.v.*
29	Earthenware pipes for conveyance of water, 12½ per cent. *a.v.*
35	Emery cloth, powder, and paper, and sand paper, exempt.
9	Engines, hot air, exempt.
9	Engines, gas, exempt.
9	Engines, steam, exempt.
9	Engines, electric, exempt.
9	Engine packing, exempt.
9	Engine fittings, all articles used exclusively for, exempt.
9	Engineers' machine tools, exempt.
1	Envelopes, 12½ per cent. *a.v.*
14	Epsom salts, 12½ per cent.
23	Essence of lemon, 15*s.* per gall.
19	Feathers, 12½ per cent. *a.v.*
12	Felt for sheathing, exempt.
9	Fencing, wire, droppers, standards, and winders, exempt.
32	Fencing, iron, not otherwise specified, 12½ per cent.
12	Fire clay, lumps, fire bricks, exempt.
25	Firewood, 12½ per cent. *a.v.*
8	Fireworks, 12½ per cent. *a.v.*
21	Fish, fresh, exempt.
21	Fish, dried, 1*d.* per lb.
21	Fish in tins, 12½ per cent. *a.v.*
21	Fish, pickled, in barrels or kegs, 12½ per cent. *a.v.*
5	Fishing Tackle, 12½ per cent.
25	Flax, unmanufactured, exempt.
24-25	Flock, cotton and woollen, exempt.
22	Flour, wheaten, 1*s.* 3*d.* 100 lbs.
22	Flour, corn, 1*d.* per lb.
15-19	Forfar and grey calicoes, 12½ per cent. *a.v.*
9	Forks, agricultural, free.
9	Fork handles, 10 per cent. *a.v.*
22	Fruits—apples, pears, plums, quinces, peaches, apricots, cherries, gooseberries, raspberries, currants, and strawberries, 1*s.* per bushel.
22	Fruit, fresh, not otherwise enumerated, exempt.
22	Fruits, dried, 2*d.* lb.
22	Ditto, candied, bottled, and canned, 3*d.* per lb.
13	Furniture, manufactured of wood, 12½ per cent. *a.v.*
19	Furs, 12½ per cent. *a.v.*
32	Galvanised iron, in plain sheet, exempt.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
8	Gasoline, 1*s.* 3*d.* per gallon.
32	Galvanised wire rope, exempt.
13	Gasaliers, 12½ per cent. *a.v.*
25	Gilt mouldings made of wood, for picture frames, 20 per cent. *a.v.*
23	Gin, Geneva, 15*s.* gallon, no allowance for underproof.
23	Ginger, preserved in syrup, 1*d.* per lb.
23	Ginger, dried, whole or ground, 4*d.* lb.
29	Glass, plate, crown and sheet, and glass of every description, 12½ per cent. *a.v.*
23	Ginger, preserved, dry, 12½ per cent.
29	Glass, silvered, 12½ per cent. *a.v.*
29	Glassware, 12½ per cent. *a.v.*
6	Globes, exempt.
15-19	Gloves, kid, and all gloves manufactured from skins, 12½ per cent. *a.v.*
24	Glue, 1*d.* lb.
24	Glucose, 6*s.* per cwt.
31	Gold (see Plate), 20 per cent. *a.v.*
31	Gold, in bars, sheet, or dust, exempt.
22	Grain and Pulse of every description, including maize, pollard, & sharps, 10*d.* 100 lbs.
29	Granite in rough block, exempt.
22	Grapes, exempt.
35	Grindery, viz., all articles used exclusively in bootmaking and shoemaking, exempt; other, 12½ per cent.
29	Grindstones, 12½ per cent.
22	Groats, patent, 12½ per cent. *a.v.*
24	Grease, exempt.
14	Guano, exempt.
20	Gunnies, exempt.
8	Gunpowder for blasting, 1*d.* lb.
8	Gunpowder, all other kinds, 6*d.* lb., except FFF loose, 1*d.* lb.
8	Guns and fowling-pieces, 12½ per cent. *a.v.*
15-19	Haberdashery, 12½ per cent. *a.v.*
24	Hair, unmanufactured, exempt.
9	Hair brooms, 12½ per cent. *a.v.*
24	Hair-cloth for hop-kilns, exempt.
10	Halters, 12½ per cent. *a.v.*
21	Hams, 2*d.* lb.
9	Handles, axe, fork, and spade, 10 per cent. *a.v.*
9	Handles, rake, 12½ per cent. *a.v.*
9	Hardware, 12½ per cent. *a.v.*
2	Harmoniums, 12½ per cent. *a.v.*
2	Harmoniums for churches and chapels, exempt.
10	Harness, 12½ per cent. *a.v.*
9	Harrows, horse hoes, horse rakes, ploughs, & scarifiers, 5 per cent.
9	Harvest yarn, rope yarn, and binding wire, exempt.
15-19	Hats, 12½ per cent. *a.v.*
15-19	Hatters' material; viz., all articles prepared for and used exclusively by hatters, exempt.
25	Hay, 12½ per cent.
18	Hearth-rugs, 12½ per cent. *a.v.*
25	Hempseed, ½*d.* lb.
25	Hemp, unmanufactured, exempt.
25	Hemp, manufactured for bagging, 12½ per cent. *a.v.*
21	Herrings, Red, 1*d.* per lb.
24	Hides, dressed, 12½ per cent. *a.v.*
24	Hides, raw and unmanufactured, exempt.
9	Hoes, agricultural, 5 per cent. *a.v.*
9	Holloware, of iron only, 12½ per cent. *a.v.*
23	Hops, 2*d.* lb.
21	Honey, 2*d.* per lb.
33	Horses, exempt.
15-19	Hosiery, 12½ per cent. *a.v.*
30	Ice, exempt.
25	Indiarubber antirattlers and buffers, exempt.
32	Ingots, sheets or plates of copper, brass, bronze, and zinc, exempt.
14	Ink, except printing, 12½ per cent. *a.v.*
25	Ink, printing, exempt.
6-7	Instruments, scientific, optical, and surgical, 12½ per cent.
32	Iron, galvanised, and zinc sheet or piping, ridge-caps or spouting, 12½ per cent. *a.v.*
32	Iron, rod, bar, hoop, sheet, plate and pig, exempt.
32	Iron fencing, not otherwise specified, 12½ per cent.
9	Ironmongery, all kinds, 12½ per cent. *a.v.*
21	Isinglass, 12½ per cent. *a.v.*
9	Implements and tools, agricultural and horticultural, not otherwise enumerated, exempt.
9	Iron retorts and rough iron castings, 1*s.* 6*d.* cwt. gross.
24	Ivory black and unmanufactured, exempt.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
29	Jars for jam, glass, or earthenware, 12½ per cent. *a.v.*
31	Jewelry and trinkets, wholly or in part of gold or silver, 20 per cent. *a.v.*
9	Jewellers' and watchmakers' tools, exempt.
25	Jute, unmanufactured, exempt.
25	Jute manufactured for bagging, 12½ per cent. *a.v.*
25	Kapock, exempt.
19	Kid gloves, 12½ per cent. *a.v.*
9	Knives, putty, shoemakers', hay, saddlers', and pruning, exempt.
14	Kreosote, crude, exempt.
14	Lamp-black, exempt.
9	Lamps, 12½ per cent. *a.v.*
11	Lamps, ships' signal and binnacle, 12½ per cent. *a.v.*
21	Lard, 2*d.* lb.
32	Lead, milled, sheet, or piping, 2*s.* 6*d.* cwt.
32	Lead, red and white, ½*d.* lb.
32	Lead, pig, ore, & scrap, exempt.
22	Lemons, exempt.
24	Leather, 12½ per cent. *a.v.*
24	Leather goods, 12½ per cent. *a.v.*
24	Leather, viz., Morocco, Levant, glove, kid, patent calf, goat Levant, coloured roan, calf kid, mock kid, glacé kid, enamelled hide for buggy tops, and dash leather, exempt.
14	Lime, carbolate of, exempt.
14	Lime, chloride of, exempt.
23	Limejuice, 12½ per cent.
15-19	Linen, manufactures of, 12½ per cent. *a.v.*
25	Linoleum, 12½ per cent. *a.v.*
25	Linseed, ½*d.* lb.
25	Linseed meal, ½*d.* lb.
25	Linseed oilcake, exempt.
22	Liquorice, 2*d.* lb.
23	Liquors (see Spirits).
29	Lithographic stones, 10 per cent. *a.v.*
14	Logwood, exempt.
13	Looking-glasses, 12½ per cent. *a.v.*
22	Macaroni, 2*d.* lb.
9	Machines, sewing, exempt.
9	Machines and machinery of every description, not workable by hand, and not otherwise enumerated, exempt.
9	Machinery of every description, not otherwise enumerated, 12½ per cent. *a.v.*
1	Magazines, reviews, and pamphlets, exempt.
22	Maize, 10*d.* 100 lbs.
22	Maizena, 1*d.* per lb.
23	Malt, 1*s.* bushel.
23	Malt liquors, in wood, 9*d.* gallon
23	Malt liquors, in bottle, 1*s.* 3*d.* gallon, six reputed quarts or one dozen reputed pints to be taken as a gallon.
14	Manures of every description, exempt.
29	Marble, rough, in block, exempt.
3	Maps and charts, exempt.
14	Matches, lucifer, 1*s.* cubic foot. Ditto, wax vestas, 3*s.* cubic foot.
20	Matting of every description and manufacture, 12½ per cent. *a.v.*
29	Memorial windows for churches or chapels, exempt.
1	Millboards, exempt.
19	Millinery, 12½ per cent. *a.v.*
29	Mill-stones, exempt.
29	Mill-silk, exempt.
22	Molasses, 3s. 6*d.* cwt.
22	Molasses, raw, for manufacturing purposes, rendered unfit for human consumption, exempt.
9	Mop handles, 12½ per cent. *a.v.*
9	Mops, woollen and cotton, 12½ per cent. *a.v.*
9	Mould-boards, or mould-shares, exempt.
12	Mouldings made of wood, 20 per cent. *a.v.*
32	Muntz metal, exempt.
1	Music, printed, exempt.
2	Musical instruments of every description, 12½ per cent. *a.v.*
23	Mustard, 2*d.* lb.
21	Mutton, 1*s.* 6*d.* 100 lbs. gross.
25	Myrobalans, exempt.
9	Nails, iron, except screw nails, 2*s.* 6*d.* cwt. gross.
9	Nails, yellow metal or copper, exempt.
14	Naphtha, 1*s.* per gall.
1	Newspapers, exempt.
23	Nutmegs, 4*d.* lb.
22	Nuts, except cocoanuts, 2*d.* per lb.
9	Nuts and bolts, iron, 2*s.* 6*d.* cwt.
11	Oars for boats, 12½ per cent.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
25	Oakum and junk, exempt.
22	Oatmeal, ½*d.* lb.
22	Oats, 10*d.* 100 lbs.
22	Oil-cake, exempt.
18	Oil cloth, oil baize, 12½ per cent *a.v.*
35*	Oilmen's stores, except pickles, sauces, and oils, 12½ per cent. *a.v.*
26	Oils, not otherwise enumerated, 1*s.* 3*d.* per gallon.
26	Oil, kerosene, 1*s.* per gallon.
14	Oils, medicinal & perfumed, 12½ per cent. *a.v.*
26	Oils, whale, palm unrefined, refuse shale, exempt.
26	Oils, cod and sod, for tanning purposes, exempt.
22	Onions, 1*s.* per cwt.
14	Opium, 20*s.* per lb.
22	Oranges, exempt.
32	Ores of all kinds of metals, exempt.
2	Organs, 12½ per cent. *a.v.*
2	Organs, cabinet, 12½ per cent. *a.v.*
2	Organs and cabinet organs, for churches and chapels, exempt.
13	Ovens, camp, 12½ per cent. *a.v.*
20-25	Packages, all empty, casks, cases, boxes, bags, on proof of Collector of Customs that they have been used in the export of Tasmanian produce, exempt.
20	Packs, wool, 4*d.* each.
3	Paintings and engravings, for Public Institutions, exempt.
14	Paints of every description, ½*d.* lb.
25	Palm oil, unrefined, exempt.
25	Paper for fruit wrapping, not exceeding 8 inches by 10 inches, exempt.
25	Paper, viz., all writing paper, and white and coloured printing paper, without printing or ruling thereon, imported in original wrappers, and untrimmed edges, as it leaves the mill, 5 per cent. *a.v.*
25	Paper, room, 12½ per cent. *a.v.*
25	Paper, glass and sand, 12½ per cent. *a.v.*
26	Parafine and mineral wax, exempt.
13	Passengers' baggage and cabin furniture, except musical instruments and plate, arriving in the Colony at any time within six months before or after the owner thereof, also household furniture and effects, the same having been in the owner's use for a period of not less than six months before the removal to Tasmania, such furniture and effects not being for sale, exempt.
19	Passengers' baggage (see Baggage).
22	Peas, 10*d.* per 100 lbs.
22	Peas, split, ½*d.* lb.
23	Pepper, black, 2*d.* lb.
23	Pepper, white, 2*d.* per lb.
23	Perfumed spirits, 24*s.* gallon.
14	Phosphorus, exempt.
23	Perfumery and perfumed oils, 12½ per cent. *a.v.*
23	Perry, 1*s.* 3*d.* in wood, 1*s.* 6*d.* in bottle, per gallon.
3	Photographs, framed or unframed, 12½ per cent. *a.v.*
2	Pianofortes, 12½ per cent. *a.v.*
23	Pickles, in bottles—Quarts, 3*s.* dozen; pints, 2*s.* dozen; in half-pints, 1*s.* 4*d.* per dozen.
3	Pictures, framed or unframed, 12½ per cent. *a.v.*
33	Pigs, exempt.
22	Pineapples, exempt.
29	Pipeclay, unmanufactured, exempt.
4	Pipes, clay, 12½ per cent. *a.v.*
32	Pipes, iron, not being made of galvanised iron plain sheeting, exempt.
29	Pipes, draining, and earthenware for conveyance of water, 12½ per cent. *a.v.*
29	Pottery materials, viz., litharge, China clay, Cornish stone, felspar, manganese, and oxide of cobalt, exempt.
32	Piping, lead, 12½ per cent.
8	Pistols, 12½ per cent. *a.v.*
25	Pitch, exempt.
34	Plants, trees, and shrubs, exempt.
29	Plaster of Paris, 12½ per cent.
29	Plate glass, 12½ per cent. *a.v.*
31-32	Plate and plated-ware, of every description, 20 per cent. *a.v.*

* Specific articles to be properly defined and classed where possible.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
10	Plough-traces, 12½ per cent. *a.v.*
22	Pollard, 10*d.* per 100 lbs.
25	Polish of all kinds, 1*s.* 6*d.* gallon.
21	Pork, in pieces under 5 lbs., 10 per cent. *a.v.* Ditto, 5 lbs. and over, 2*d.* per lb.
14	Potash and pearlash, exempt.
14	Potash, Muriate of, exempt.
22	Potatoes, 6*d.* per cwt.
9	Pots, iron, 12½ per cent. *a.v.*
33	Poultry, exempt.
22	Preserves, jams, and jellies, 1*d.* per lb.
9	Printing presses, types and materials, exempt.
3	Prize, reward, or trophy given or imported for the purpose of being given at any public exhibition or competition, 12½ per cent. *a.v.*
22	Prunes, 2*d.* per lb.
22	Pulse, 10*d.* 100 lbs.
25	Pulu, exempt.
32	Railway or tramway material: viz., rails, fish-plates, bolts, spikes, or other fastenings, springs, wheels, axles, exempt.
19	Regalia and banners specially imported by Friendly Societies, exempt.
9	Rakes, agricultural, 5 per cent. *a.v.*
9	Rake handles, 12½ per cent. *a.v.*
25	Rape seed, ½*d.* lb.
25	Ratans, split or unsplit, exempt.
32	Rabbit-proof wire netting, being 3 feet to 4 feet wide, 1½-inch and 1⅝ in. mesh, and 17 gauge, exempt.
9	Rabbit traps, phosphorisers, or any machine used for destroying rabbits, exempt.
25	Resin, exempt.
9	Retorts, and rough iron castings, 1*s.* 6*d.* per cwt. gross.
22	Rice, ½*d.* lb.
32	Rivets, iron, 12½ per cent. *a.v.*
25	Room paper, 12½ per cent. *a.v.*
20	Rope and cordage of every description, and wire rope, exempt.
18	Rugs, woollen and cotton, 12½ per cent. *a.v.*
15	Rugs, hearth, 12½ per cent. *a.v.*

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
23	Rum, 15*s.* gallon, no allowance for underproof.
20	Sacks, corn, exempt.
10	Saddlery of every description, 12½ per cent. *a.v.*
10	Saddlers' ironmongery, not plated, exclusively used in manufacture of saddlery, exempt.
10	Saddlers' materials—chaise cart, gig, buggy, and riding saddle trees, hog skins, saddle nails, dees and staples, patent winker leather, exempt.
22	Sago, 2*d.* lb.
11	Sail canvas, 12½ per cent. *a.v.*
23	Salt, 1*s.* 6*d.* cwt.
23	Saltpetre, 12½ per cent. *a.v.*
23	Salt, rock, exempt.
29	Sand, for moulding, exempt.
25	Sand paper and glass paper, exempt.
12	Sashes made of wood, 20 per cent. *a.v.*
14	Sash weights, 1*s.* 6*d.* per cwt.
16	Satin of every description, 12½ per cent. *a.v.*
23	Sauces in bottles, quarts, 4*s.* dozen.
23	Sauces in bottles, pints, 3*s.* dozen.
23	Ditto half pints, 2*s.* dozen.
23	Sauces in bottle, quarter pints, 1*s.* 6*d.* per dozen, and so in proportion for any greater or less quantity than a dozen of each size.
23	Sauces in bulk, 3*s.* dozen.
35	Scale-board, exempt.
32	Screw nails, 12½ per cent. *a.v.*
9	Scythe handles, 10 per cent. *a.v.*
25	Seeds, garden, exempt.
9	Sewing machines of every description, exempt.
9	Share moulds, exempt.
22	Sharps, 10*d.* per 100 lbs.
15-19	Shellac, exempt.
33	Sheep or lambs, 1*s.* 6*d.* per head.
14	Sheep dip, 10 per cent. *a.v.*
9	Sheep shears, exempt.
25	Shoe thread, exempt.
19	Shoes and boots, 12½ per cent. *a.v.*
8	Shot, 1*d.* lb.
9	Shovels, exempt.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
34	Shrubs and plants, exempt.
20	Silk, unmanufactured, exempt.
16	Silk, manufactures of, 12½ per cent. *a.v.*
31	Silver, in bar, ingot, or sheet, exempt.
24	Skins, dressed, 12½ per cent. *a.v.*
24	Skins, raw and unmanufactured, exempt.
12	Skirtings, made of wood, 20 per cent. *a.v.*
1	Slate pencils, 12½ per cent. *a.v.*
1	Slates, school, 12½ per cent. *a.v.*
29	Slates in block, exempt.
12	Slates, roofing and flagging, 12½ per cent. *a.v.*
23	Snuff, 6*s.* lb.
24	Soap, not perfumed or fancy, 1*d.* lb.
24	Soap, perfumed and fancy, 3*d.* lb.
14	Soda crystals, ½*d.* lb.
14	Soda, carbonate of, 1*d.* lb.
14	Soda, nitrate of, exempt.
14	Soda ash, exempt.
14	Soda, caustic, and silicate of, exempt.
32	Solder and soldering fluid, exempt.
9	Spades, exempt.
9	Spade and shovel handles, 10 per cent. *a.v.*
36	Specimens of natural history, mineralogy, botany, exempt.
23	Spices of all kinds, 4*d.* lb.
23	Spirits,—viz., brandy, cordials, rectified spirits, and all other liquors or strong waters, Geneva, gin, rum, whisky, 15*s.* gallon, no allowance for underproof.
14	Spirits, methylated, taken as proof, containing not less than 10 per cent. of methyle alcohol, and so in proportion for any quantity less than one-sixth of a gallon, 3*s.* per gallon.
23	Spirits, perfumed, 24*s.* gallon.
14-23	Spirituous compounds, 15*s.* per gallon proof, no allowance for under proof.
14	Spirits of tar, 6*d.* gallon.
12	Spouting, galvanised iron and zinc, 12½ per cent. *a.v.*
25	Starch, 1*d.* lb.
1	Stationery, 12½ per cent. *a.v.*
3	Statuary, 12½ per cent. *a.v.*
24	Stearine, exempt.
32	Steel, unmanufactured, exempt.

Classified Order.	ARTICLES AND IMPORT TARIFF.
No.	
29	Stone in rough block, exempt.
21	Suet, tallow and grease, exempt.
22	Sugar candy, 2*d.* lb.
22	Sugar (loaf and crushed), 1*d.* lb; all other kinds, 6*s.* cwt.
14	Sulphur, 12½ per cent.
14	Sulphate of copper, exempt.
14	Sulphate of magnesia, exempt.
25	Sumac, exempt.
3	Tablets, memorial, exempt.
24	Tallow, exempt.
9	Tanks, iron, 12½ per cent. *a.v.*
22	Tapioca, 2*d.* lb.
25	Tar, spirits of, 6*d.* gallon.
25	Tar, exempt.
26	Tar oil, 1*s.* 3*d.* per gall.
14	Tartaric acid, 4*d.* lb.
23	Tea, 3*d.* per lb.
14	Terra japonica, exempt.
23	Tannin and tannin extract, exempt.
32	Tinfoil, exempt.
29	Tiles, draining, 12½ per cent. *a.v.*
12	Tiles, kiln, flooring, 12½ per cent. *a.v.*
25	Timber in log, exempt.
25	Timber, sawn, 3 inches and over, exempt.
25	Timber, sawn, under 3 inches, 2*s.* 6*d.* 100 super. feet.
32	Tin and tin plates, unmanufactured, exempt.
23	Tobacco, 3*s.* per lb.; unmanufactured, 2*s.* per lb.
9	Tools, boring and edge, and all tools and implements for manufacturing purposes not otherwise enumerated, exempt.
5	Toys, 12½ per cent. *a.v.*
25	Tow, exempt.
9	Traction engines and their carriages, exempt.
34	Trees, exempt.
22	Treacle, 3*s.* 6*d.* per cwt.
9	Tubs, 12½ per cent. *a.v.*
14	Turpentine, 1*s.* gallon.
15-19	Tweeds of every description, 12½ per cent. *a.v.*
20	Twine of all kinds, whipcord, and other cords, 1*d.* lb.
9	Type, printing, exempt.
19	Umbrellas, 12½ per cent. *a.v.*
12	Veneer, wood, exempt.
25	Valonia, exempt.
25	Varnish and polish of all kinds, not otherwise enumerated, 1*s.* 6*d.* gallon.

Classified Order.	ARTICLES, AND IMPORT TARIFF.
No.	
22	Vegetables, not otherwise enumerated, 12½ per cent.
14	Vegetable black, exempt.
16	Velvets, 12½ per cent. *a.v.*
13	Venetian blinds, 12½ per cent. *a.v.*
22	Vermicelli, 2*d.* lb.
23	Vinegar, 9*d.* gallon.
25	Wadding, 12½ per cent. *a.v.*
22	Walnuts and other nuts, 2*d.* lb.
6	Watches of every description, 20 per cent. *a.v.*
14	Wax vestas, 3*s.* cubic foot.
11	Whaling implements and gear, exempt.
24 } 26 }	Whalebone, whale fins, from whale fisheries, exempt.
22	Wheat, 10*d.* per 100 lbs.
20	Whipcord, 1*d.* per lb.
10	Whips and whipthongs, 12½ per cent. *a.v.*
23	Whisky, 15*s.* gallon, no allowance for underproof.
29	Whiting, 9*d.* cwt.
9	Wickerware, lined and unlined, 12½ per cent. *a.v.*
3	Windows, memorial, for churches and chapels, exempt.
23	Wines, in wood, 6*s.* gallon.
23	Wines, in bottles, 8*s.* gallon, six reputed quarts or one dozen reputed pints to be taken as a gallon.
23	Wines, sparkling, 10*s.* gallon.
32	Wire, not otherwise specified, 12½ per cent. *a.v.*
32	Wire, binding, for agricultural machinery, exempt.
24	Wool, unmanufactured, exempt.
20	Wool bags, 4*d.* each.
15	Woollen manufactures, 12½ per cent. *a.v.*
15	Woollen rugs, 12½ per cent. *a.v.*
24	Woollen waste, exempt.
3-4	Works of art, for Public Institutions, exempt.
9	Workboxes and desks, 12½ per cent. *a.v.*
25	Wrapping paper, except for fruit, 12½ per cent. *a.v.*
9	Windmills, exempt.
11	Yellow metal rods, bolts, or sheathing, and yellow metal nails, exempt.
32	Zinc, sheets or plates, exempt.
	All goods the produce of Tasmania, exempt.
	All goods imported for the use of Her Majesty's Government, exempt.

POPULATION STATISTICS, TASMANIA, 1890.

	1890.*	1889.	1890 *as compared with* 1889.	
			Increase.	Decrease.
	No.	No.	No.	No.
Area, sq. miles	26,215	26,215	...	...
Population on 31st December	156,621	151,470	5151	...
Ditto, mean for the year	154,051	148,810	5241	...
Births—				
Males	2466	2438	32	...
Females	2347	2313	31	...
TOTAL	4813	4751	63	...
Deaths—				
Males	1216	1207	9	...
Females	902	895	8	...
TOTAL	2118	2102	17	...
Marriages	955	967	...	12
Immigration—				
Males	18,905	15,249	3656	...
Females	10,612	8194	2418	...
TOTAL	29,517	23,443	6074	...
Emigration—				
Males	16,699	13,699	3000	...
Females	10,371	7072	3299	...
TOTAL	27,070	20,771	6299	...
Migration—				
Excess of Immigration over Emigration	2447	2672	...	225
Population per square mile, 31st December	5·97	5·78	19	...
Births per 1000 of mean Population	31·25	31·93	...	68
Deaths, ditto	13·76	14·13	...	37
Marriages, ditto	6·19	6·50	...	...

* Subject to revision.

MISCELLANEOUS PARTICULARS.

	£
Total Exports, Year 1890	1,486,992
Total Imports, ditto	1,897,512
Value Wool exported, ditto	419,173
Value Tin exported, ditto	296,761
Value Gold exported, ditto	87,085
Value Silver exported, ditto	16,872
Public Debt, 31st December, 1890	6,432,800

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